Object Storage Service

C SDK Developer Guide

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1 Before You Start (SDK for C)

This section describes the version compatibility and important notes about the C SDK of Object Storage Service (OBS).

Compatibility

- **3.*.*** is compatible with **3.0.0**.
- **3.*.*** is incompatible with **2.*.***.
- **3.*.*** is incompatible with **1.*.***.
- Arm compilation environment:

```
NAME="EulerOS"
VERSION="2.0 (SP8)"
ID="euleros"
ID_LIKE="rhel fedora centos"
VERSION_ID="2.0"
PRETTY_NAME="EulerOS 2.0 (SP8)"
ANSI_COLOR="0;31"
```

  Kernel version:

```
4.19.36-vhulk1905.1.0.h276.eulerosv2r8.aarch64
```

  gcc/g++ version:

```
gcc (GCC) 10.3.0/g++ (GCC) 10.3.0
```

- Linux compilation environment:

```
NAME="CentOS Linux"
VERSION="7 (Core)"
ID="centos"
ID_LIKE="rhel fedora"
VERSION_ID="7"
PRETTY_NAME="CentOS Linux 7 (Core)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:centos:centos:7"
HOME_URL="https://www.centos.org/"
BUG_REPORT_URL="https://bugs.centos.org/"

CENTOS_MANTISBT_PROJECT="CentOS-7"
CENTOS_MANTISBT_PROJECT_VERSION="7"
REDHAT_SUPPORT_PRODUCT="centos"
REDHAT_SUPPORT_PRODUCT_VERSION="7"
```

  Kernel version:

```
3.10.0-957.5.1.el7.x86_64
```

  gcc/g++ version:

```
gcc (GCC) 10.3.0/g++ (GCC) 10.3.0
```

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> **NOTE**
>
> The required environments for compiling the SDK binary package are listed above. Compatibility is not guaranteed for other kernels and operating systems. If you need to use other operating systems or kernel versions, use the open-source code to compile on your own.

Important Notes

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

- Ensure that you are familiar with OBS basic concepts, such as **buckets**, **objects**, and **access keys (AK and SK)**.
- After an API call is complete using an instance of ObsClient, view whether an exception is thrown. If no, the API call was successful. If yes, the operation failed. You can check the error information from **SDK Error Handling (SDK for C)**.
- Some features are available only in some regions. If an API call returns the 405 HTTP status code, check whether the region supports this feature.

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2 Downloading and Installing the SDK (SDK for C)

This section provides the download and compilation methods for the OBS SDK for C.

SDK Download

- Latest version of OBS C SDK source code: Click **here** to download.

SDK Compilation

You can compile the SDK based on the platform you are using. Before that, you must obtain the **SDK source code**.

- In Linux:

Go to the **source/eSDK_OBS_API/eSDK_OBS_API_C++/** directory and run the following script:

export SPDLOG_VERSION=spdlog-1.12.0

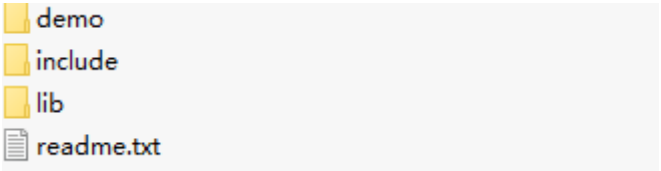
#On an x86 server, run the following command:

bash build.sh sdk

#On an Arm server, run the following command:

bash build_aarch.sh sdk

For details about the parameters, see the comments in the scripts. A **sdk.tgz** demo package that contains the content shown below is generated.



- In Windows:

Use Visual Studio to open the **sln** file in **source**/**eSDK_OBS_API**/**eSDK_OBS_API_C++**/**sln**/vc100/ and generate the **obs** project. Then, **huaweisecurec.lib**,

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huaweisecurec.dll, **libeSDKOBS.lib**, and **libeSDKOBS.dll** are generated in the output directory (which can be queried in the project properties).

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3 Getting Started (SDK for C)

3.1 Setting Up an OBS Environment (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Step 1 Sign up for a cloud service account.

Create an account to use OBS. If you already have one, use it instead.

1. Open a browser.
2. Visit the **Huawei Cloud official website**.
3. In the upper right corner of the page, click **Register**.
4. Enter the registration information and click **Register**.

Step 2 Subscribe to OBS.

You are required to top up your account before using OBS.

1. Log in to OBS Console.
2. Click **Billing** in the upper right corner of the page to go to the billing center.
3. Click **Top Up**. The dialog box for top-up is displayed.
4. Top up the account as prompted.
5. After the top-up is complete, close the dialog box and go back to the management console homepage.
6. On the homepage, click **Object Storage Service** to subscribe to the OBS service and log in to OBS Console.

Step 3 Create access keys.

OBS uses the AK and SK of an account for signature verification to make sure that only authorized accounts can access specified OBS resources. Detailed explanations about AK and SK are as follows:

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- An access key ID (AK) defines a user who accesses the OBS system. An AK belongs to only one user, but one user can have multiple AKs. The OBS system recognizes the users who access the system by their access key IDs.
- An SK is the secret access key on OBS, which is required to access OBS. You can generate authentication information based on the SKs and request header fields. An SK matches an AK, and they group into a pair.

Access keys are classified into permanent access keys (AK/SK) and temporary access keys (AK/SK and security token). A user can create a maximum of two valid permanent access keys. Temporary access keys can be used to access OBS only within the specified validity period. After the temporary access keys expire, they need to be obtained again. For security purposes, you are advised to use temporary access keys to access OBS, or periodically update your access keys if you use permanent access keys. The following describes how to obtain access keys of these two types.

- Permanent access keys:
  a. Log in to OBS Console.
  b. In the upper right corner of the page, hover the cursor over the username and choose **My Credentials**.
  c. On the **My Credentials** page, select **Access Keys** in the navigation pane on the left.
  d. On the **Access Keys** page, click **Create Access Key**.
  e. In the **Create Access Key** dialog box that is displayed, enter the password and verification code.

     NOTE

     - If you have not bound an email address or mobile number, you need to enter only the login password.
     - If you have bound an email address and a mobile number, you can select the verification either by email address or mobile number.

  f. Click **OK**.
  g. In the **Download Access Key** dialog box that is displayed, click **OK** to save the access keys to your browser's default download path.
  h. Open the downloaded **credentials.csv** file to obtain the access keys (AK and SK).

     NOTE

     - Each user can create up to two valid access keys.
     - To prevent your access keys from being leaked, keep them secure. If you click **Cancel** in the dialog box, the access key will not be downloaded, and can neither be obtained later. If you need to use an access key later, you need to create a new one.
- To get temporary access keys, refer to the following:

  Temporary access keys are issued by the system and are only valid for 15 minutes to 24 hours. Once expired, they must be requested again. They follow the principle of least privilege. When a temporary AK/SK pair is used for authentication, a security token must be used at the same time.

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To obtain them, see **Obtaining a Temporary AK/SK and a Security Token**.

NOTICE

OBS is a global service. When obtaining temporary access keys, set the token scope to **domain** to apply the token to global services. Global services are not differentiated by any project or region.

----End

3.2 Obtaining Endpoints (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

- You can click **here** to view the endpoints and regions enabled for OBS.

3.3 Initializing the SDK (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

ObsClient functions as the C client for accessing OBS. It offers callers a series of APIs for interaction with OBS. These APIs are used for managing and operating resources, such as buckets and objects, stored in OBS.

Before using the OBS C SDK to initiate an OBS request, you need to call the initialization API. When you are exiting the process, you need to call the initialization cancellation API to release resources.

Before using the C SDK, you must first call **obs_initialize** to complete the initialization. This API only needs to called once in a process.

```
obs_status  ret_status = OBS_STATUS_BUTT;
ret_status = obs_initialize(OBS_INIT_ALL);
if (OBS_STATUS_OK != ret_status)
{
    printf("obs_initialize failed(%s).\n", obs_get_status_name(ret_status));
    return ret_status;
}
obs_deinitialize();
// Do not repeatedly call obs_initialize or obs_deinitialize, because these operations may lead to invalid memory access.
```

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3.4 Initializing option (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

When the function of SDK for C is called, the **option** parameter must be passed. You can use function **init_obs_options** to initialize the **option** configuration, including the AK, SK, endpoint, bucket, timeout, and temporary authentication.

- Sample code for creating and initializing **option** using permanent access keys (AK/SK):

```
// Create and initialize option.
obs_options option;
init_obs_options(&option);
option.bucket_options.host_name = "<your-endpoint>";
option.bucket_options.bucket_name = "<Your bucketname>";

// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
// Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/intl/en-us/usermanual-ca/ca_01_0003.html.
option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
```

- Sample code for creating and initializing **option** using temporary access keys (AK/SK and SecurityToken):

```
// Create and initialize option.
obs_options option;
init_obs_options(&option);
option.bucket_options.host_name = "<your-endpoint>";
option.bucket_options.bucket_name = "<Your bucketname>";

// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
// Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/intl/en-us/usermanual-ca/ca_01_0003.html.
option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
option.bucket_options.token = getenv("SecurityToken");
```

NOTE

- OBS is a global service. When obtaining temporary credentials, set the token scope to **domain** to make the token applicable to all projects and regions within an account.

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3.5 Creating a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

A bucket is a global namespace of OBS and is a data container. It functions as a root directory of a file system and can store objects.

Sample code:

```
static void test_create_bucket(obs_canned_acl canned_acl, char *bucket_name)
{
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create and initialize option.
    obs_options option;
    init_obs_options(&option);
    option.bucket_options.host_name = "<your-endpoint>";
    option.bucket_options.bucket_name = "<Your bucketname>";
// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    // Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/intl/en-us/usermanual-ca/ca_01_0003.html.
    option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");


    // Set the response callback function.
    obs_response_handler response_handler =
    {
        0, &response_complete_callback
    };

    // Create a bucket. For details about pre-defined ACLs, see the section "Configuring a Bucket ACL (SDK for C)".
    create_bucket(&option, "<bucket ACL>", NULL, &response_handler, &ret_status);
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket successfully. \n");
    }
    else
    {
        printf("create bucket failed(%s).\n", obs_get_status_name(ret_status));
    }
}
```

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NOTE

Bucket names are globally unique. Ensure that the bucket you create is named differently from any other bucket. A bucket name must comply with the following rules:

- Contains 3 to 63 characters, starts with a digit or letter, and supports only lowercase letters, digits, hyphens (-), and periods (.)
- Cannot be an IP address.
- Cannot start or end with a hyphen (-) or period (.).
- Cannot contain two consecutive periods (..), for example, **my..bucket**.
- Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**.
- If you create buckets of the same name, no error will be reported and the bucket properties comply with those set in the first creation request.

The example here sets the bucket's ACL to private read and write, storage class to Standard, and location to the default region for the global domain name.

For more information, see **Creating a Bucket (SDK for C)**.

NOTICE

- During bucket creation, if the endpoint you use corresponds to the default region CN North-Beijing1 (cn-north-1), specifying a region is not a must. If the endpoint you use corresponds to any other region, except the default one, you must set the region to the one that the used endpoint corresponds to. To view the valid regions, see **Regions and Endpoints**. For example, if the endpoint used for initialization is **obs.ap-southeast-1.myhuaweicloud.com**, you must set **Location** to **ap-southeast-1** when you create a bucket. Otherwise, status code 400 will be returned.

3.6 Uploading an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

The data flow is saved to **callback_data** (see the **callback_data** definition in **Uploading an Object - Streaming (SDK for C)**). Use the callback function **put_object_data_callback** defined in **obs_put_object_handler** to copy the content of the uploaded object to **buffer**, a character pointer parameter of the callback function.

For more information, see **Uploading an Object - Streaming (SDK for C)**.

Sample code:

```
static void test_put_object_from_buffer()
{
    // Buffer to be uploaded
   char *buffer = "abcdefg";
    // Length of the buffer to be uploaded
   int buffer_size = strlen(buffer);
```

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```
    // Name of an object to be uploaded
    char *key = "put_buffer_test";

    // Initialize option.
    obs_options option;
    init_obs_options(&option);
    option.bucket_options.host_name = "<your-endpoint>";
    option.bucket_options.bucket_name = "<Your bucket name>";
// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    // Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/intl/en-us/usermanual-ca/ca_01_0003.html.
    option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");

    // Initialize the properties of an object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Customize the structure for storing uploaded data.
    put_buffer_object_callback_data data;
    memset(&data, 0, sizeof(put_buffer_object_callback_data));
    // Assign the buffer value to the structure.
    data.put_buffer = buffer;
    // Set buffersize.
    data.buffer_size = buffer_size;
    // Set the callback function. The corresponding callback function needs to be implemented.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_buffer_complete_callback },
          &put_buffer_data_callback
    };
    put_object(&option, key, buffer_size, &put_properties,0,&putobjectHandler,&data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from buffer successfully. \n");
    }
    else
    {
        printf("put object from buffer failed(%s).\n", obs_get_status_name(data.ret_status));
    }
}
```

3.7 Downloading an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

This example shows how to download an object from a bucket to a directory and save the object as **test**.

Sample code:

```
static void test_get_object()
{
    char *file_name = "./test";
    obs_object_info object_info;
    // Initialize option.
    obs_options option;
    init_obs_options(&option);
    option.bucket_options.host_name = "<your-endpoint>";
```

```
    option.bucket_options.bucket_name = "<Your bucketname>";
// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    // Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/intl/en-us/usermanual-ca/ca_01_0003.html.
    option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "<object key>";
    object_info.version_id = "<object version ID>";
    // Customize the structure for storing downloaded object data based on service requirements.
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    // Define range download parameters.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    // Customize callback function for download.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback, &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&option, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
}
```

NOTE

For more information, see **Downloading an Object (SDK for C)**.

3.8 Listing Objects (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

This example shows how to list all objects in a bucket.

Sample code:

```
static void test_list_bucket_objects()
{
    // Create and initialize option.
    obs_options option;
    init_obs_options(&option);
    option.bucket_options.host_name = "<your-endpoint>";
    option.bucket_options.bucket_name = "<Your bucketname>";

// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables
```

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```
for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    // Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/intl/en-us/usermanual-ca/ca_01_0003.html.
    option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");

    // Set response callback function.
    obs_list_objects_handler list_bucket_objects_handler =
    {
        { &response_properties_callback, &list_objects_complete_callback },
        &list_objects_callback
    };

    // Customize callback data.
    list_bucket_callback_data data;
    memset(&data, 0, sizeof(list_bucket_callback_data));
    // List objects.
    list_bucket_objects(&option, "<prefix>", "<marker>", "<delimiter>", "<maxkeys>", &list_bucket_objects_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("list bucket objects successfully. \n");
    }
    else
    {
        printf("list bucket objects failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
}
```

NOTE

- For more information, see **Listing Objects in a Bucket (SDK for C)**.

3.9 Deleting an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

This example shows how to delete an object from a bucket.

Sample code:

```
static void test_delete_object()
{
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create and initialize object information.
    obs_object_info object_info;
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "<Your Key>";
    // Create and initialize option.
    obs_options option;
    init_obs_options(&option);
    option.bucket_options.host_name = "<your-endpoint>";
    option.bucket_options.bucket_name = "<Your bucketname>";

// Hard-coded or plaintext AK/SK are risky. For security purposes, encrypt your AK/SK and store them in the configuration file or environment variables. In this example, the AK/SK are stored in environment variables for identity authentication. Before running this example, configure environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    // Obtain an AK/SK pair on the management console. For details, see https://support.huaweicloud.com/
```

```
intl/en-us/usermanual-ca/ca_01_0003.html.
    option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Set response callback function.
    obs_response_handler responseHandler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    // Delete an object.
    delete_object(&option,&object_info,&responseHandler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("delete object successfully. \n");
    }
    else
    {
        printf("delete object failed(%s).\n", obs_get_status_name(ret_status));
    }
}
```

NOTE

- For more information, see **Deleting an Object (SDK for C)**.

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4 Initialization (SDK for C)

4.1 Configuring Access Keys (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

To use OBS, you need a valid pair of AK and SK for signature authentication. For details, see **Setting Up an OBS Environment (SDK for C)**.

After obtaining the AK and SK, you can start initialization.

- **Initializing the SDK (SDK for C)**
- **Configuring option (SDK for C)**
- **Configuring SDK Logging (SDK for C)**

4.2 Initializing the SDK (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

ObsClient functions as the C client for accessing OBS. It offers callers a series of APIs for interaction with OBS. These APIs are used for managing and operating resources, such as buckets and objects, stored in OBS.

Before using the OBS C SDK to initiate an OBS request, you need to call the initialization API. When you are exiting the process, you need to call the initialization cancellation API to release resources.

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Before using the C SDK, you must first call **obs_initialize** to complete the initialization. This API only needs to called once in a process.

```
obs_status  ret_status = OBS_STATUS_BUTT;
ret_status = obs_initialize(OBS_INIT_ALL);
if (OBS_STATUS_OK != ret_status)
{
    printf("obs_initialize failed(%s).\n", obs_get_status_name(ret_status));
    return ret_status;
}
obs_deinitialize();
// Do not repeatedly call obs_initialize or obs_deinitialize, because these operations may lead to invalid memory access.
```

4.3 Configuring option (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

When the function of SDK for C is called, the **obs_options** parameter must be passed. You can use function **init_obs_options** to initialize the **obs_options** configuration, including the AK, SK, endpoint, bucket, timeout, and temporary authentication. **obs_options** consists of **obs_bucket_context** and **obs_http_request_option**. The following table describes the parameters that can be set.

Table 4-1 obs_options.obs_bucket_context parameters

Parameter	Description	Default Value	Recommended Value
host_name	The requested host name, which is the domain name (the endpoint) of the server where the requested resource is stored.	NULL	-
bucket_name	Name of the bucket where the operation is performed	NULL	-

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Parameter	Description	Default Value	Recommended Value
protocol	The protocol used for sending requests. Possible values include HTTP and HTTPS. For security purposes, you are advised to use HTTPS.	HTTPS protocol: OBS_PROTOCOL_HTTPS	OBS_PROTOCOL_HTTPS
access_key	AK of OBS	NULL	-
secret_access_key	SK used for authentication. It can be used to sign a character string.	NULL	-
obs_storage_class	Set this parameter when the storage class needs to be configured in the PUT or POST request.	OBS Standard: OBS_STORAGE_CLASS_STANDARD	Default value
token	Security token of the temporary access key	NULL	-
bucket_type	Specifies whether a bucket is an object bucket or a parallel file system.	Bucket for object storage: OBS_BUCKET_OBJECT	-
bucket_list_type	Specifies whether to list all buckets, object buckets, or parallel file systems.	All buckets: OBS_BUCKET_LIST_ALL	-

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Table 4-2 obs_options.obs_http_request_option parameters

Parameter	Description	Default Value	Recommended Value
connect_time	Timeout period for establishing an HTTP/HTTPS connection, in ms. The default value is **60,000**.	60000	10000 to 60000
max_connected_time	Timeout period (in seconds) of an HTTP/HTTPS request. The value 0 indicates that there is never disconnection.	0	0
proxy_auth	Proxy authentication information, in the format *username*:*password*	NULL	-
proxy_host	Proxy server	NULL	-

NOTE

If the network is unstable, you are advised to set larger values for **connect_time** and **max_connected_time**.

4.4 Configuring SDK Logging (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

The OBS C SDK log path is specified by the **LogPath** field in **OBS.ini**. By default, logs are stored in the **logs** directory at the same level as the **lib** directory of the C SDK dynamic library. **OBS.ini** must be in the same directory as **libeSDKLogAPI.so**.

The OBS C SDK allows you to use **set_obs_log_path** to specify a log path. This method has two parameters. The first parameter specifies a path and the second determines what to do under the path. If the second parameter is set to **True**, the SDK searches for **OBS.ini** in the path specified by the first parameter for log configuration. If the second parameter is set to **False**, the SDK generates **OBS.ini** and log files in the path specified by the first parameter.

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NOTE

- For details about SDK logging, see **Log Analysis (SDK for C)**.

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5 Bucket Management (SDK for C)

5.1 Creating a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

OBS buckets are containers for storing objects you upload to OBS. This API creates a bucket.

When creating a bucket, you can also configure parameters such as the storage class, region, and access control list (ACL) as needed.

Restrictions

- To create a bucket, you must have the **obs:bucket:CreateBucket** permission. IAM is recommended for granting permissions. For details, see **IAM Custom Policies**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

  When creating a bucket, if you use the endpoint **obs.myhuaweicloud.com** for client initialization, you do not have to specify a region (indicated by **location**) where the bucket will be created, because OBS automatically creates the bucket in the CN North-Beijing1 (cn-north-1) region. However, if the endpoint you use is not **obs.myhuaweicloud.com**, you must specify a region that matches the used endpoint, or status code **400** is returned.

  For example, if the endpoint used for initialization is **obs.ap-southeast-1.myhuaweicloud.com**, you must set **Location** to **ap-southeast-1** when creating a bucket. Otherwise, status code **400** is returned.
- A maximum of 100 buckets (regardless of regions) can be created for an account. There is no limit on the number and size of objects in a bucket.

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- A bucket name must be unique in OBS. If you repeatedly create buckets with the same name in the same region, an HTTP status code **200** will be returned. In other cases, creating a bucket with the same name as an existing bucket will have an HTTP status code **409** returned, indicating that such a bucket already exists.
- The name of a deleted bucket can be reused for another bucket or a parallel file system at least 30 minutes after the deletion.
- Not all regions support the creation of multi-AZ buckets. You can check whether a region allows you to create multi-AZ buckets by referring to **Product Pricing Details**.

Method

```
void create_bucket(const obs_options *options, obs_canned_acl canned_acl,
        const char *location_constraint, obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 5-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
canned_acl	**obs_canned_acl**	Yes	**Explanation:** ACL of the bucket. **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.

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Parameter	Type	Mandatory (Yes/No)	Description
location_constraint	const char *	Yes	**Explanation:** Where a bucket is located. **Restrictions**: If the used endpoint is **obs.myhuaweicloud.com**, this parameter is not required. If any other endpoint is used, this parameter is required. **Value range**: To learn about valid regions and endpoints, see **Regions and Endpoints**. An endpoint is the request address for calling an API. Endpoints vary depending on services and regions. To obtain the regions and endpoints, contact the enterprise administrator. **Default value**: If **obs.myhuaweicloud.com** is used as the endpoint and no region is specified, **cn-north-1** (the CN North-Beijing1 region) is used by default.
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-3 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.

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Value	Description
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 5-4 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of **obs_response_properties** in the callback can be recorded into **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 5-5 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**.
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**.

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-6 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-7 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-8 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-9 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-10 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-11 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-12 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-13 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-14 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-15 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Default value**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** The algorithm used for decryption. **Restrictions**: Returned in the event of SSE-C server-side encryption. **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** The MD5 value of the key used for decryption. **Restrictions**: ● Returned in the event of SSE-C server-side encryption. ● Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-16 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-17 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-18 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Creating an Object Bucket

This example creates an object bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // This example creates an object bucket.
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);

    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";

    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
```

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```
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    // Set the bucket region (CN-Hong Kong is used as an example). bucketLocation must match the
endpoint.
    char * bucketLocation = "ap-southeast-1";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    // Set the storage class of the bucket. The Standard class is used in this example.
    options.bucket_options.storage_class = OBS_STORAGE_CLASS_STANDARD;
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create a bucket and set the ACL for the bucket. The following uses a private bucket as an example.
    create_bucket(&options, OBS_CANNED_ACL_PRIVATE, bucketLocation,
                  &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket %s successfully. \n", bucketName);
    } else {
        printf("create bucket %s failed(%s).\n", bucketName, obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
```

```
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Creating a 3AZ Bucket

This example creates a 3AZ bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to create a 3AZ bucket:
```

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```
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    // Set the bucket region (CN-Hong Kong is used as an example). bucketLocation must match the endpoint.
    char * bucketLocation = "ap-southeast-1";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback, &response_complete_callback };
    // Set the storage class of the bucket. The Standard class is used in this example.
    options.bucket_options.storage_class = OBS_STORAGE_CLASS_STANDARD;
    obs_create_bucket_params create_param;
    // Set the bucket ACL.
    create_param.canned_acl = OBS_CANNED_ACL_PRIVATE;
    // Set the bucket location.
    create_param.location_constraint = bucketLocation;
    // Set the data redundancy policy for the bucket. The following uses 3AZ as an example.
    create_param.az_redundancy = OBS_REDUNDANCY_3AZ;
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create a 3AZ object bucket.
    create_bucket_with_params(&options, &create_param, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket %s successfully. \n", bucketName);
    } else {
        printf("create bucket %s failed(%s).\n", bucketName, obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
```

```
        if (properties-> field) {                                   \
            printf("%s: %s\n", name, properties->field);          \
        }                                                           \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
```

```
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Creating a Parallel File System

This example creates a bucket as a parallel file system.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to create a bucket as a parallel file system:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char * bucketName = "example-posix-bucket-name";
    // Set the bucket region (CN-Hong Kong is used as an example). bucketLocation must match the
endpoint.
    char * bucketLocation = "ap-southeast-1";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create a parallel file system.
    create_pfs_bucket(&options, OBS_CANNED_ACL_PRIVATE, bucketLocation, &response_handler,
&ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket successfully. \n");
    }
    else
    {
        printf("create bucket failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
```

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```
        obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
        printf("server_callback buf is %s, len is %llu",
            data->buffer, data->buffer_len);
        return OBS_STATUS_OK;
    }
    else {
        printf("error! obs_sever_callback_data is null!");
        return OBS_STATUS_OK;
    }
}
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
```

```
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Creating a Bucket with Complex Configurations

This example specifies the ACL, storage class, and location when creating a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to specify the ACL, storage class, and location when creating a
bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    // Set the bucket region (CN-Hong Kong is used as an example). bucketLocation must match the
endpoint.
    char * bucketLocation = "ap-southeast-1";

    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    // Set the storage class of the bucket. The Standard class is used in this example.
    options.bucket_options.storage_class = OBS_STORAGE_CLASS_STANDARD;
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create a bucket. Set the bucket ACL (OBS_CANNED_ACL_PRIVATE), storage class
(OBS_STORAGE_CLASS_STANDARD), and location (bucketLocation).
    create_bucket(&options, OBS_CANNED_ACL_PRIVATE, bucketLocation,
                  &response_handler, &ret_status);
    // Check whether the request is successful.
```

```
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket %s successfully. \n", bucketName);
    } else {
        printf("create bucket %s failed(%s).\n", bucketName, obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
```

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```
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Creating a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **Why Am I Unable to Create a Bucket?**

5.2 Listing Buckets (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

OBS buckets are containers for storing objects you upload to OBS. This API returns a list of all buckets that meet the specified conditions in all regions of the current account. Bucket names are returned in the lexicographical order.

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Restrictions

- To list buckets, you must have the **obs:bucket:ListAllMyBuckets** permission. IAM is recommended for granting permissions. For details, see **IAM Custom Policies**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void list_bucket_obs(const obs_options *options, obs_list_service_obs_handler *handler, void *callback_data);
```

Request Parameters

Table 5-19 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_list_service_obs_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-20 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions:** None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-21 obs_list_service_obs_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
listServiceCallback	**obs_list_service_obs_callback** *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None **Value range**: None **Default value**: None

Table 5-22 obs_list_service_obs_callback

Parameter	Type	Mandatory (Yes/No)	Description
owner_id	const char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	const char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
creation_date_seconds	int64_t	Yes	**Explanation:** Time when the bucket was created. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
location	const char *	Yes	**Explanation:** Where a bucket is located. **Restrictions**: If the used endpoint is **obs.myhuaweicloud.com**, this parameter is not required. If any other endpoint is used, this parameter is required. **Value range**: To learn about valid regions and endpoints, see **Regions and Endpoints**. An endpoint is the request address for calling an API. Endpoints vary depending on services and regions. To obtain the regions and endpoints, contact the enterprise administrator. **Default value**: If **obs.myhuaweicloud.com** is used as the endpoint and no region is specified, **cn-north-1** (the CN North-Beijing1 region) is used by default.
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-23 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-24 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-25 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-26 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-27 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-28 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-29 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-30 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-31 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 5-32 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-33 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-34 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in a request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** The algorithm used for decryption. **Restrictions**: Returned in the event of SSE-C server-side encryption. **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-35 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-36 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-37 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Listing Buckets

This example lists buckets.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void list_bucket_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
// Customize the callback structure for listing buckets.
typedef struct list_service_data
{
    int headerPrinted;
    int allDetails;
    obs_status ret_status;
} list_service_data;
obs_status listServiceObsCallback(const char *owner_id, const char *bucket_name,
    int64_t creationDate, const char *location, void *callback_data);
int main()
{
    // The following example shows how to list buckets:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");

    list_service_data data;
    memset(&data, 0, sizeof(data));
    // When the value is set to 1, the owner ID of the bucket is added.
    data.allDetails = 1;
    // Customize a response callback function.
    obs_list_service_obs_handler listHandler =
    {
        {response_properties_callback,
        &list_bucket_complete_callback },
        &listServiceObsCallback
    };
    // List buckets.
    list_bucket_obs(&options, &listHandler, &data);
    if (data.ret_status == OBS_STATUS_OK)
    {
        printf("list bucket successfully. \n");
    }
    else
    {
        printf("list bucket failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
```

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callback_data (custom callback data).

```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void list_bucket_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        list_service_data *data = (list_service_data *)callback_data;
        data->ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
```

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```
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void printListServiceObsHeader(int allDetails)
{
    printf("%-56s  %-20s  %-20s", "                        Bucket",
        "      Created",
        "     Location");
    if (allDetails) {
        printf("  %-64s",
            "                           Owner ID");
    }
    printf("\n");
    printf("--------------------------------------------------------  "
        "--------------------  "
        "----------");
    if (allDetails) {
        printf("  ----------------------------------------------------");
    }
    printf("\n");
}
obs_status listServiceObsCallback(const char *owner_id,
    const char *bucket_name,
    int64_t creationDate,
    const char *location,
    void *callback_data)
{
    list_service_data *data = (list_service_data *)callback_data;
    if (!data->headerPrinted) {
        data->headerPrinted = 1;
        printListServiceObsHeader(data->allDetails);
    }
    char timebuf[256] = { 0 };
    if (creationDate >= 0) {
        time_t t = (time_t)creationDate;
        strftime(timebuf, sizeof(timebuf), "%Y-%m-%dT%H:%M:%SZ", gmtime(&t));
    }
    else {
        timebuf[0] = 0;
    }
    printf("%-56s  %-20s  %-20s", bucket_name, timebuf, location);
    if (data->allDetails) {
        printf("  %-64s", owner_id ? owner_id : "");
    }
    printf("\n");
    return OBS_STATUS_OK;
}
```

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Helpful Links

- Creating a Bucket
- (GitHub) Sample Code
- OBS Error Codes

5.3 Deleting a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the Issues page of GitHub.

Function

This API deletes an empty bucket. You can delete buckets you no longer use to free up space. The name of a deleted bucket can be reused for another bucket at least 30 minutes after the deletion.

NOTE

The data you proactively deleted from OBS cannot be recovered. Exercise caution when using this API.

Restrictions

- Only empty buckets can be deleted. An empty bucket means that:
  - The bucket does not contain any object (including noncurrent versions and delete markers).
  - The bucket does not contain any fragments, which means that there are no multipart uploads that have not been completed in the bucket.
- To delete a bucket, you must be the bucket owner or have the required permission (**obs:bucket:DeleteBucket** in IAM or **DeleteBucket** in a bucket policy). For details, see Introduction to OBS Access Control, IAM Custom Policies, and Creating a Custom Bucket Policy.
- The mapping between OBS regions and endpoints must comply with what is listed in Regions and Endpoints.

Method

```
void delete_bucket(const obs_options *options, obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 5-38 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_response_handler***	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-39 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-40 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback***	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-41 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-42 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-43 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-44 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-45 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-46 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-47 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-48 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-49 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-50 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-51 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Default value**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-52 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-53 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-54 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Deleting a Bucket

This example deletes bucket **example-bucket-name**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to delete a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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```
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Delete the bucket.
    delete_bucket(&options, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("delete bucket successfully. \n");
    }
    else
    {
        printf("delete bucket failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
```

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```
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

NOTE

- Only empty buckets (without objects and fragments) can be deleted.
- Bucket deletion is a non-idempotent operation and an error will be reported if the to-be-deleted bucket does not exist.

Helpful Links

- **Deleting an Object**
- **Managing Fragments**
- **Listing Objects** and **Listing Initiated Multipart Uploads in a Bucket**. These two operations can help you determine whether a bucket is empty.

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- **Deleting Buckets**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **Why Can't I Delete a Bucket?**

5.4 Checking Whether a Bucket Exists (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API checks whether a bucket exists. If an HTTP status code **200** is returned, the bucket exists. If **404** is returned, the bucket does not exist.

Restrictions

- To determine whether a bucket exists, you must be the bucket owner or have the required permission (**obs:bucket:HeadBucket** in IAM or **HeadBucket** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void obs_head_bucket(const obs_options *options, obs_response_handler *handler,
                     void *callback_data);
```

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Request Parameters

Table 5-55 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_response_handler***	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-56 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-57 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback***	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-58 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-59 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-60 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-61 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-62 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-63 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-64 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-65 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-66 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-67 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-68 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Default value**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-69 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-70 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-71 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Checking Whether a Bucket Exists

This example checks whether bucket **example-bucket-name** exists.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to check whether a bucket exists:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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SECRET_ACCESS_KEY.

```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Check whether the bucket exists.
    obs_head_bucket(&options, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK)
    {
        printf("head bucket successfully. \n");
    }
    else
    {
        printf("head bucket failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
```

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```
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Obtaining Bucket Metadata**. The same REST API is used to determine whether a bucket exists and to obtain bucket metadata.
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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5.5 Configuring a Bucket ACL (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Access control lists (ACLs) allow resource owners to grant other accounts the permissions to access resources. By default, only the resource owner has full control over resources when a bucket or object is created. That is, the bucket creator has full control over the bucket, and the object uploader has full control over the object. Other accounts do not have the permissions to access resources. If resource owners want to grant other accounts the read and write permissions on resources, they can use ACLs. ACLs grant permissions to accounts. After an account is granted permissions, both the account and its IAM users can access the resources.

For more information, see **ACLs**.

This API modifies a bucket ACL.

Restrictions

- A bucket can have up to 100 ACL rules.
- To configure an ACL for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketAcl** in IAM or **PutBucketAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void set_bucket_acl(const obs_options * options, manager_acl_info * aclinfo,
        obs_response_handler * handler, void *callback_data);
```

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Request Parameters

Table 5-72 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
aclinfo	**manager_acl_info** *	Yes	**Explanation:** ACL structure. **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-73 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-74 manager_acl_info

Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. If the object is not a versioned object, set **version** to **NULL**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
owner_id	char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_display_name	char *	Yes	**Explanation:** Display name of a user **Restrictions**: None **Value range**: None **Default value**: None
acl_grant_count_return	int *	Yes	**Explanation:** Length of the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
object_delivered	**obs_object_delivered**	Yes	**Explanation:** Whether the ACL of the bucket applies to its objects **Restrictions**: None **Value range**: For details, see **obs_object_delivered**.

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Parameter	Type	Mandatory (Yes/No)	Description
acl_grants	obs_acl_grant *	Yes	**Explanation:** Permissions information structure. **Restrictions**: None

Table 5-75 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-76 obs_object_delivered

Value	Description
OBJECT_DELIVERED_TRUE	The ACL of the bucket applies to its objects.
OBJECT_DELIVERED_FALSE	The ACL of the bucket does not apply to its objects.

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Table 5-77 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None
permission	**obs_permission**	Yes	**Explanation:** Bucket ACL. **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	**obs_bucket_delivered**	Yes	**Explanation:** Whether the bucket ACL is passed to objects in the bucket. **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: BUCKET_DELIVERED_FALSE (indicating that the bucket ACL is not passed to the objects in the bucket)

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Table 5-78 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 5-79 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

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Table 5-80 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

Table 5-81 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-82 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-83 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-84 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-85 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-86 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-87 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-88 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-89 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-90 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-91 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-92 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Default value**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-93 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-94 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-95 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Setting a Pre-defined ACL When Creating a Bucket

This example specifies a pre-defined ACL when creating a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to specify a pre-defined ACL when creating a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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SECRET_ACCESS_KEY.

```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    // Set the bucket region (CN-Hong Kong is used as an example). bucketLocation must match the endpoint.
    char * bucketLocation = "ap-southeast-1";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Create a bucket and set the ACL for the bucket. The following example specifies a private bucket:
    create_bucket(&options, OBS_CANNED_ACL_PRIVATE, bucketLocation, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket successfully. \n");
    }
    else
    {
        printf("create bucket failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
```

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```
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Setting a Pre-defined ACL for an Existing Bucket

This example sets a pre-defined ACL for an existing bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
```

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```
int main()
{
    // The following example shows how to set an ACL for a bucket using the header:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Set the pre-defined ACL for the bucket.
    obs_canned_acl canned_acl = OBS_CANNED_ACL_PUBLIC_READ_WRITE;
    set_bucket_acl_by_head(&options, canned_acl, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set bucket acl by head successfully. \n");
    }
    else
    {
        printf("set bucket acl by head failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
```

```
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
```

```
    }
  }
}
```

Code Examples: Setting a User-defined Bucket ACL

This example sets a bucket ACL directly.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
void init_acl_info(manager_acl_info *aclinfo);
void deinitialize_acl_info(manager_acl_info *aclinfo);
int main()
{
    // The following example shows how to set an ACL for a bucket using the body:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Create and initialize the ACL.
    manager_acl_info aclinfo;
    init_acl_info(&aclinfo);
    // Set the bucket owner ID (owner_id).
    strcpy(aclinfo.owner_id, "1*****************************a");
    // Set the tenant ID of the authorized account (canonical_user.id).
    strcpy(aclinfo.acl_grants[0].grantee.canonical_user.id, "0*****************************0");
    strcpy(aclinfo.acl_grants[0].grantee.canonical_user.display_name, "name1");
    aclinfo.acl_grants[0].grantee_type = OBS_GRANTEE_TYPE_CANONICAL_USER;
    // Set the ACL. The read permission is used as an example.
    aclinfo.acl_grants[0].permission = OBS_PERMISSION_READ;
    // Specify whether the bucket ACL is passed to the objects in the bucket. In this example, the bucket ACL
is not passed.
    aclinfo.acl_grants[0].bucket_delivered = BUCKET_DELIVERED_FALSE;
    // Set the bucket ACL.
    set_bucket_acl(&options, &aclinfo, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set bucket acl successfully. \n");
    }
```

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```
    else
    {
        printf("set bucket acl failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the memory.
    deinitialize_acl_info(&aclinfo);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
```

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```
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void init_acl_info(manager_acl_info *aclinfo)
{
    memset(aclinfo, 0, sizeof(manager_acl_info));
    aclinfo->acl_grants = (obs_acl_grant*)malloc(sizeof(obs_acl_grant));
    memset(aclinfo->acl_grants, 0, sizeof(obs_acl_grant));
    strcpy(aclinfo->acl_grants->grantee.canonical_user.id, "userid1");
    strcpy(aclinfo->acl_grants->grantee.canonical_user.display_name, "name1");
    aclinfo->acl_grants->grantee_type = OBS_GRANTEE_TYPE_LOG_DELIVERY;
    aclinfo->acl_grants->permission = OBS_PERMISSION_WRITE;
    aclinfo->acl_grants->bucket_delivered = BUCKET_DELIVERED_FALSE;
    aclinfo->acl_grant_count_return = (int*)malloc(sizeof(int));
    *(aclinfo->acl_grant_count_return) = 1;
    aclinfo->owner_id = (char *)malloc(sizeof(char) * OBS_MAX_GRANTEE_USER_ID_SIZE);
    memset(aclinfo->owner_id, 0, sizeof(char) * OBS_MAX_GRANTEE_USER_ID_SIZE);
    aclinfo->owner_display_name = (char *)malloc(sizeof(char) * OBS_MAX_GRANTEE_USER_ID_SIZE);
    memset(aclinfo->owner_display_name, 0, sizeof(char) * OBS_MAX_GRANTEE_USER_ID_SIZE);
    memset(&aclinfo->object_info, 0, sizeof(aclinfo->object_info));
}
void deinitialize_acl_info(manager_acl_info *aclinfo)
{
    free(aclinfo->acl_grants);
    free(aclinfo->owner_display_name);
    free(aclinfo->owner_id);
    free(aclinfo->acl_grant_count_return);
}
```

Helpful Links

- **Configuring a Bucket ACL**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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- **Access Control FAQ**

5.6 Obtaining a Bucket ACL (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Access control lists (ACLs) allow resource owners to grant other accounts the permissions to access resources. By default, only the resource owner has full control over resources when a bucket or object is created. That is, the bucket creator has full control over the bucket, and the object uploader has full control over the object. Other accounts do not have the permissions to access resources. If resource owners want to grant other accounts the read and write permissions on resources, they can use ACLs. ACLs grant permissions to accounts. After an account is granted permissions, both the account and its IAM users can access the resources.

For more information, see **ACLs**.

This API returns the ACL of a bucket.

Restrictions

- To obtain the ACL of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketAcl** in IAM or **GetBucketAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_acl(const obs_options * options, manager_acl_info * aclinfo,
        obs_response_handler * handler, void *callback_data);
```

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Request Parameters

Table 5-96 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
aclinfo	**manager_acl_info** *	Yes	**Explanation:** ACL structure. **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-97 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-98 manager_acl_info

Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. If the object is not a versioned object, set **version** to **NULL**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
owner_id	char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_display_name	char *	Yes	**Explanation:** Display name of a user **Restrictions**: None **Value range**: None **Default value**: None
acl_grant_count_return	int *	Yes	**Explanation:** Length of the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
object_delivered	**obs_object_delivered**	Yes	**Explanation:** Whether the ACL of the bucket applies to its objects **Restrictions**: None **Value range**: For details, see **obs_object_delivered**.

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Parameter	Type	Mandatory (Yes/No)	Description
acl_grants	obs_acl_grant *	Yes	**Explanation:** Permissions information structure. **Restrictions**: None

Table 5-99 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-100 obs_object_delivered

Value	Description
OBJECT_DELIVERED_TRUE	The ACL of the bucket applies to its objects.
OBJECT_DELIVERED_FALSE	The ACL of the bucket does not apply to its objects.

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Table 5-101 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None
permission	**obs_permission**	Yes	**Explanation:** Bucket ACL. **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	**obs_bucket_delivered**	Yes	**Explanation:** Whether the bucket ACL is passed to objects in the bucket. **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: BUCKET_DELIVERED_FALSE (indicating that the bucket ACL is not passed to the objects in the bucket)

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Table 5-102 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 5-103 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

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Table 5-104 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

Table 5-105 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-106 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-107 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-108 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-109 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-110 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-111 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-112 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-113 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-114 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-115 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-116 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Default value**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-117 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-118 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-119 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Obtaining a Bucket ACL

You can call get_bucket_acl to obtain the bucket ACL. The following example shows how to obtain the bucket ACL:

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
manager_acl_info* malloc_acl_info();
void free_acl_info(manager_acl_info **acl);
void print_grant_info(int acl_grant_count, obs_acl_grant *acl_grants);
int main()
{
    // The following example shows how to obtain the bucket ACL:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
```

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```
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Allocate the memory for the ACL structure.
    manager_acl_info *aclinfo = malloc_acl_info();
    // Call the API for obtaining the ACL.
    get_bucket_acl(&options, aclinfo, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("get bucket acl: ----------");
        printf("%s\n", aclinfo->owner_id);
        if (aclinfo->acl_grant_count_return)
        {
            print_grant_info(*aclinfo->acl_grant_count_return, aclinfo->acl_grants);
        }
    }
    else
    {
        printf("get bucket acl failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the memory.
    free_acl_info(&aclinfo);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
```

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```
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
manager_acl_info* malloc_acl_info()
{
    manager_acl_info *aclinfo = (manager_acl_info*)malloc(sizeof(manager_acl_info));
```

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```
    memset(aclinfo, 0, sizeof(manager_acl_info));
    aclinfo->acl_grants = (obs_acl_grant*)malloc(sizeof(obs_acl_grant) * OBS_MAX_ACL_GRANT_COUNT);
    memset(aclinfo->acl_grants, 0, sizeof(obs_acl_grant) * OBS_MAX_ACL_GRANT_COUNT);
    aclinfo->acl_grant_count_return = (int*)malloc(sizeof(int));
    *(aclinfo->acl_grant_count_return) = OBS_MAX_ACL_GRANT_COUNT;
    size_t owner_id_size = (OBS_MAX_GRANTEE_USER_ID_SIZE + 1) * sizeof(char);
    aclinfo->owner_id = (char *)malloc(owner_id_size);
    memset(aclinfo->owner_id, 0, owner_id_size);
    aclinfo->owner_display_name = (char *)malloc(OBS_MAX_GRANTEE_DISPLAY_NAME_SIZE);
    memset(aclinfo->owner_display_name, 0, OBS_MAX_GRANTEE_DISPLAY_NAME_SIZE);
    return aclinfo;
}
void free_acl_info(manager_acl_info **acl)
{
    manager_acl_info *aclinfo = *acl;
    free(aclinfo->acl_grants);
    free(aclinfo->owner_display_name);
    free(aclinfo->owner_id);
    free(aclinfo->acl_grant_count_return);
    free(aclinfo);
}
void print_grant_info(int acl_grant_count, obs_acl_grant *acl_grants)
{
    int i;
    for (i = 0; i < acl_grant_count; i++)
    {
        obs_acl_grant *grant = acl_grants + i;
        const char *type;
        char composedId[OBS_MAX_GRANTEE_USER_ID_SIZE +
            OBS_MAX_GRANTEE_DISPLAY_NAME_SIZE + 16] = { 0 };
        const char *id;
        switch (grant->grantee_type) {
        case OBS_GRANTEE_TYPE_CANONICAL_USER:
            type = "UserID";
            snprintf(composedId, sizeof(composedId),
                "%s (%s)", grant->grantee.canonical_user.id,
                grant->grantee.canonical_user.display_name);
            id = composedId;
            break;
        case OBS_GRANTEE_TYPE_ALL_OBS_USERS:
            type = "Group";
            id = "Authenticated Users";
            break;
        default:
            type = "Group";
            id = "All Users";
            break;
        }
        const char *perm;
        switch (grant->permission) {
        case OBS_PERMISSION_READ:
            perm = "READ";
            break;
        case OBS_PERMISSION_WRITE:
            perm = "WRITE";
            break;
        case OBS_PERMISSION_READ_ACP:
            perm = "READ_ACP";
            break;
        case OBS_PERMISSION_WRITE_ACP:
            perm = "WRITE_ACP";
            break;
        default:
            perm = "FULL_CONTROL";
            break;
        }
        const char *delivered;
        if (grant->bucket_delivered == BUCKET_DELIVERED_FALSE)
            delivered = "false";
```

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```
        else
            delivered = "true";
        printf("%-6s  %-90s  %-12s  %-8s\n", type, id, perm, delivered);
    }
}
```

Helpful Links

- **Obtaining the Bucket ACL**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **Access Control FAQ**

5.7 Obtaining Bucket Storage Information (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API returns the storage information on a bucket, including the number of objects and the space occupied by the objects in the bucket.

NOTE

OBS measures bucket storage statistics in the background and does not update the storage information in real time. So, you are advised not to perform real-time verification on the storage information.

Restrictions

- To obtain the storage information of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketStorage** in IAM or **GetBucketStorage** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_storage_info(const obs_options *options, int capacity_length, char *capacity,
                             int object_number_length, char *object_number,
                             obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 5-120 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
capacity_length	int	Yes	**Explanation:** Cache size of the used capacity **Restrictions**: None **Value range**: None **Default value**: None
capacity	char *	Yes	**Explanation:** Used capacity **Restrictions**: None **Value range**: None **Default value**: None
object_number_length	int	Yes	**Explanation:** Cache size of the object number **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_number	char *	Yes	**Explanation:** Cache of the object number **Restrictions**: None **Value range**: None **Default value**: None
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-121 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None

Parameter	Type	Mandatory (Yes/No)	Description
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-122 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-123 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-124 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-125 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-126 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-127 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-128 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-129 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-130 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-131 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-132 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-133 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Default value**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-134 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-135 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-136 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Obtaining Bucket Storage Information

This example obtains the storage information about a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to obtain the storage information about a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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SECRET_ACCESS_KEY.

```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    //Define the bucket capacity cache and object quantity cache.
    char capacity[OBS_COMMON_LEN_256 + 1] = { 0 };
    char obj_num[OBS_COMMON_LEN_256 + 1] = { 0 };
    // Obtain the bucket storage information.
    get_bucket_storage_info(&options, OBS_COMMON_LEN_256 + 1, capacity, OBS_COMMON_LEN_256 + 1,
obj_num,
        &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("get_bucket_storage_info success,bucket=%s objNum=%s capacity=%s\n",
            bucketName, obj_num, capacity);
    }
    else
    {
        printf("get_bucket_storage_info failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
```

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```
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Obtaining Storage Information of a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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5.8 Setting a Bucket Quota (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

A quota limits the maximum capacity allowed in a bucket. By default, there is no limit on the storage capacity of the entire OBS system or a single bucket, and any number of objects can be stored. You can set a storage quota to control the total size of objects that can be uploaded to the bucket. If the storage quota is reached, object upload will fail.

A quota limit does not apply to the objects uploaded before the quota is configured. If the specified quota is already smaller than the total size of existing objects in the bucket, the existing objects in the bucket will not be deleted, but no more object can be uploaded to the bucket later. In this case, you can upload new objects only by deleting some existing objects until the used space is less than the quota.

Restrictions

- A bucket storage quota must be a non-negative integer expressed in bytes. The maximum value is $2^{63} - 1$.
- OBS does not provide an API for deleting bucket storage quotas. You can set the bucket storage quota to **0** to cancel the limit.
- To configure a storage quota for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketQuota** in IAM or **PutBucketQuota** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void set_bucket_quota(const obs_options *options, uint64_t storage_quota,
                      obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 5-137 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
storage_quota	uint64_t	Yes	**Explanation:** Quota size, in bytes. **Restrictions**: None **Value range**: None **Default value**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-138 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 5-139 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-140 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-141 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-142 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-143 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-144 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-145 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-146 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-147 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-148 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-149 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-150 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: The value must contain 32 characters. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-151 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-152 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-153 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Configuring a Bucket Quota

This example sets a bucket quota.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to set a bucket quota:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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SECRET_ACCESS_KEY.

```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    uint64_t bucketquota = 100 * 1024 * 1024 * 1024;
    // Set the bucket quota.
    set_bucket_quota(&options, bucketquota, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("set bucket quota successfully. \n");
    }
    else
    {
        printf("set bucket quota failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
```

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```
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Configuring a Bucket Storage**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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5.9 Obtaining the Storage Quota of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API returns the storage quota (upper limit of the storage capacity) of a bucket. If the quota is 0, there is no upper limit on the bucket capacity.

Restrictions

- A bucket storage quota must be a non-negative integer expressed in bytes. The maximum value is $2^{63} - 1$.
- A bucket owner with a frozen account in arrears is not allowed to query the bucket storage quota.
- To obtain the storage quota of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketQuota** in IAM or **GetBucketQuota** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_quota(const obs_options *options, uint64_t *storagequota_return,
          obs_response_handler *handler,  void *callback_data);
```

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Request Parameters

Table 5-154 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
storagequota_return	uint64_t *	Yes	**Explanation:** The obtained quota size, in bytes. **Restrictions**: None **Value range**: None **Default value**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-155 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 5-156 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-157 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-158 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-159 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-160 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-161 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-162 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-163 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-164 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-165 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-166 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-167 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-168 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-169 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-170 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Obtaining a Bucket Quota

This example calls **get_bucket_quota** to obtain the storage quota of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to obtain the bucket quota:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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SECRET_ACCESS_KEY.

```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    // Obtain the bucket quota.
    uint64_t bucketquota = 0;
    get_bucket_quota(&options, &bucketquota, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("Bucket=%s  Quota=%lu \n get bucket quota successfully. \n ",
            bucketName, bucketquota);
    }
    else
    {
        printf("get bucket quota failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
```

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```
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Querying Bucket Storage Quota**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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5.10 Configuring a Storage Class for a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

OBS offers the following storage classes: Standard, Infrequent Access, and Archive. For details, see **Storage Classes**.

This API configures a storage class for a bucket. If you do not specify a storage class when uploading or copying an object, or initiating a multipart upload, the object inherits the bucket's storage class.

Restrictions

- To configure a storage class for a bucket, you must be the bucket owner or have the required permission (**obs:PutBucketStoragePolicy** in IAM or **PutBucketStoragePolicy** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void set_bucket_storage_class_policy(const obs_options *options,
        obs_storage_class storage_class_policy, obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 5-171 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
storage_class_policy	**obs_storage_class**	Yes	**Explanation:** Storage class of the bucket. **Restrictions**: None **Value range**: For details, see **obs_storage_class**.
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-172 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 5-173 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-174 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-175 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_list_type	obs_bucket_list_type	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

Table 5-176 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-177 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-178 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 5-179 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 5-180 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-181 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-182 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-183 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-184 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-185 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: The value must contain 32 characters. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-186 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-187 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-188 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Configuring a Storage Class for a Bucket

This example sets the storage class for a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following example shows how to set a storage class for a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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SECRET_ACCESS_KEY.

```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    obs_storage_class storage_class_policy = OBS_STORAGE_CLASS_GLACIER;
    set_bucket_storage_class_policy(&options, storage_class_policy,
        &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set bucket storage class successfully.");
    }
    else
    {
        printf("set bucket storage class failed(%s).\n",
            obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
```

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```
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Configuring a Storage Class for a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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5.11 Obtaining the Storage Class of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

OBS offers the following storage classes: Standard, Infrequent Access, and Archive. For details, see **Storage Classes**.

This API returns the storage class of a bucket.

Restrictions

- To obtain a bucket's storage class, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketStoragePolicy** in IAM or **GetBucketStoragePolicy** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_storage_class_policy(const obs_options *options,
                                     obs_get_bucket_storage_class_handler *handler, void *callback_data);
```

Request Parameters

Table 5-189 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_get_bucket_storage_class_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-190 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 5-191 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 5-192 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 5-193 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 5-194 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 5-195 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 5-196 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-197 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 5-198 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-199 obs_get_bucket_storage_class_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	obs_response_handler *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
get_bucket_storage_class_callback	**obs_get_bucket_storage_policy_callback** *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None **Value range**: For details, see **obs_get_bucket_storage_policy_callback**.

Table 5-200 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 5-201 obs_get_bucket_storage_policy_callback

Parameter	Type	Mandatory (Yes/No)	Description
storage_class_policy	const char *	Yes	**Explanation:** Storage class of the bucket. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-202 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-203 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-204 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: The value must contain 32 characters. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-205 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-206 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 5-207 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Obtaining the Storage Class of a Bucket

This example obtains the storage class of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status get_bucket_storageclass_handler(const char * storage_class, void * callBackData);
int main()
{
    // The following example shows how to obtain the storage class of a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
```

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```
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the response callback function.
    obs_get_bucket_storage_class_handler getBucketStorageResponse =
    {
        {response_properties_callback, &response_complete_callback},
        &get_bucket_storageclass_handler
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    //Obtain the bucket storage class.
    get_bucket_storage_class_policy(&options, &getBucketStorageResponse, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("get bucket storage class successfully.\n");
    }
    else
    {
        printf("get bucket storage class failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
```

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```
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
obs_status get_bucket_storageclass_handler(const char * storage_class, void * callBackData)
{
    printf("Bucket storage class is: %s\n", storage_class);
    return OBS_STATUS_OK;
}
```

Helpful Links

- **Obtaining the Storage Class of a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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6 Object Upload (SDK for C)

6.1 Uploading an Object - Streaming (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API uploads a local file to OBS over the Internet. You can upload text, pictures, videos, or any other types of files.

You can upload texts, images, videos, or any other types of files smaller than 5 GB.

You can call **put_object** to upload the data streams to OBS.

Restrictions

- To upload an object, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- The object size in a single upload ranges from 0 to 5 GB.
- To upload objects larger than 5 GB, **multipart uploads** should be used.

Method

```
void put_object(const obs_options *options, char *key, uint64_t content_length,
                obs_put_properties *put_properties,
                server_side_encryption_params *encryption_params,
                obs_put_object_handler *handler, void *callback_data);
```

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Request Parameters

Table 6-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.

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Parameter	Type	Mandatory (Yes/No)	Description
put_properties	obs_put_properties*	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	server_side_encryption_params *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None
handler	obs_put_object_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 6-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 6-4 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 6-5 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 6-6 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 6-7 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 6-8 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-11 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: None **Default value**: None
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	**obs_name_value***	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header, the response message must contain this header. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.

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Parameter	Type	Mandatory (Yes/No)	Description
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator. **Default value**: None
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

Table 6-12 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 6-13 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 6-14 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 6-15 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

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Table 6-16 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **Restrictions**: None **Value range**: • application/x-www-form-urlencoded • application/json **Default value**: If no value is specified, the default value **application/json** is used.

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Table 6-17 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-18 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 6-19 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that the server-side encryption used for objects is SSE-KMS. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 6-20 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 6-21 obs_put_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
put_object_data_callback	**obs_put_object_data_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
progress_callback	obs_progress_callback_internal *	Yes	**Explanation:** Pointer to the progress callback function. **Restrictions**: None

Table 6-22 obs_put_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-23 obs_progress_callback_internal

Parameter	Type	Mandatory (Yes/No)	Description
now	uint64_t	Yes	**Explanation:** Number of bytes that have been uploaded. **Restrictions**: None **Value range**: None **Default value**: None
total	uint64_t	Yes	**Explanation:** Total number of bytes to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-24 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 6-25 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-26 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-27 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-28 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-29 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-30 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Streaming Upload

This example calls **put_object** to upload an object in a stream.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct put_buffer_object_callback_data
{
    char *put_buffer;
    uint64_t buffer_size;
    uint64_t cur_offset;
    obs_status ret_status;
} put_buffer_object_callback_data;
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data);
char* generate_upload_buffer(uint64_t buffer_size);
int main()
{
    // The following code shows how to use put_object to upload an object in the stream:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
```

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```
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    //Initialize the structure for storing the uploaded data.
    put_buffer_object_callback_data data;
    memset(&data, 0, sizeof(put_buffer_object_callback_data));
    // Set the buffer size.
    data.buffer_size = 10 * 1024 * 1024;
    // Create a simulated data buffer for the streaming upload and assign the value to the data upload structure.
    data.put_buffer = generate_upload_buffer(data.buffer_size);
    if (NULL == data.put_buffer) {
        printf("generate put buffer failed. \n");
        return;
    }
    // Name of the object to be uploaded
    char *key = "example_put_buffer_test.txt";
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_buffer_complete_callback },
          &put_buffer_data_callback
    };
    put_object(&options, key, data.buffer_size, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from buffer successfully. \n");
    }
    else
    {
        printf("put object from buffer failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    // Release the buffer.
    free(data.put_buffer);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
```

```
    do {                                                \
        if (properties-> field) {                       \
            printf("%s: %s\n", name, properties->field);        \
        }                                               \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        put_buffer_object_callback_data *data = (put_buffer_object_callback_data *)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
```

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```
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data)
{
    put_buffer_object_callback_data *data =
        (put_buffer_object_callback_data *)callback_data;
    int toRead = 0;
    if (data->buffer_size) {
        toRead = ((data->buffer_size > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->buffer_size);
        memcpy_s(buffer, buffer_size, data->put_buffer + data->cur_offset, toRead);
    }
    uint64_t originalContentLength = data->buffer_size;
    data->buffer_size -= toRead;
    data->cur_offset += toRead;
    if (data->buffer_size) {
        printf("%llu bytes remaining ", (unsigned long long)data->buffer_size);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->buffer_size) * 100) / originalContentLength));
    }
    return toRead;
}
// Create a simulated streaming upload buffer.
char* generate_upload_buffer(uint64_t buffer_size) {
    void* upload_buffer = NULL;
    if (buffer_size > 0) {
        upload_buffer = malloc(buffer_size);
        if (upload_buffer != NULL) {
            memset(upload_buffer, 't', buffer_size);
        }
    }
    return upload_buffer;
}
```

Helpful Links

- **Uploading Objects - PUT**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Upload Failure**

6.2 Uploading an Object - File-Based (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API uploads local files to OBS over the Internet. You can upload text, pictures, videos, or any other types of files.

This API uploads an object in text to a bucket.

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Restrictions

- To upload an object, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- The object size in a single upload ranges from 0 to 5 GB.
- To upload objects larger than 5 GB, **multipart uploads** should be used.

Method

```
void put_object(const obs_options *options, char *key, uint64_t content_length,
                obs_put_properties *put_properties,
                server_side_encryption_params *encryption_params,
                obs_put_object_handler *handler, void *callback_data);
```

Request Parameters

Table 6-31 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.
put_properties	**obs_put_properties***	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_put_object_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-32 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 6-33 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 6-34 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 6-35 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 6-36 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 6-37 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 6-38 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-39 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-40 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-41 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: None **Default value**: None
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	**obs_name_value***	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header, the response message must contain this header. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.

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Parameter	Type	Mandatory (Yes/No)	Description
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator. **Default value**: None
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

Table 6-42 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 6-43 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 6-44 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 6-45 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

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Table 6-46 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **Restrictions**: None **Value range**: • application/x-www-form-urlencoded • application/json **Default value**: If no value is specified, the default value **application/json** is used.

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Table 6-47 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-48 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 6-49 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that the server-side encryption used for objects is SSE-KMS. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 6-50 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 6-51 obs_put_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
put_object_data_callback	**obs_put_object_data_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
progress_callback	obs_progress_callback_internal *	Yes	**Explanation:** Pointer to the progress callback function. **Restrictions**: None

Table 6-52 obs_put_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-53 obs_progress_callback_internal

Parameter	Type	Mandatory (Yes/No)	Description
now	uint64_t	Yes	**Explanation:** Number of bytes that have been uploaded. **Restrictions**: None **Value range**: None **Default value**: None
total	uint64_t	Yes	**Explanation:** Total number of bytes to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-54 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 6-55 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-56 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-57 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-58 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-59 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-60 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Uploading a File

This example uploads a file using **put_object**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following example shows how to upload a file using put_object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
```

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(**storage_class**).

```
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_put_file_test";
    // The uploaded file
    char file_name[256] = "./example_local_file_test.txt";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    put_object(&options, key, content_length, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    if (data.infile != NULL) {
        fclose(data.infile);
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
```

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```
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
```

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```
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

NOTE

- The content to be uploaded cannot exceed 5 GB.
- When uploading file streams, you must open files in **rb** or **rb+** mode.

Helpful Links

- **Uploading Objects - POST**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Upload Failure**

6.3 Creating a Folder (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API creates a folder in an existing bucket to manage data in OBS.

OBS does not involve folders like in a file system. All elements in buckets are objects. To create a folder in OBS is essentially to create an object whose size is 0 and whose name ends with a slash (/). Such objects are no different from other objects (you can perform normal operations on them such as download and delete), except that they are displayed as folders in OBS console.

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Restrictions

- To create a folder, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- To create a folder in OBS is essentially to create an object whose size is 0 and whose name ends with a slash (/).
- To create a multi-level folder, you only need to create the folder of the last level. For example, if you want to create a folder named **src1/src2/src3/**, create it directly. You do not need to first create the **src1/** and **src1/src2/** folders.

Method

```
void put_object(const obs_options *options, char *key, uint64_t content_length,
                obs_put_properties *put_properties,
                server_side_encryption_params *encryption_params,
                obs_put_object_handler *handler, void *callback_data);
```

Request Parameters

Table 6-61 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.
put_properties	**obs_put_properties***	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_put_object_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-62 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 6-63 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 6-64 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 6-65 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 6-66 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 6-67 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 6-68 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-69 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-70 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-71 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: None **Default value**: None
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	**obs_name_value***	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header, the response message must contain this header. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.

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Parameter	Type	Mandatory (Yes/No)	Description
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator. **Default value**: None
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

Table 6-72 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 6-73 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 6-74 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 6-75 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

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Table 6-76 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **Restrictions**: None **Value range**: • application/x-www-form-urlencoded • application/json **Default value**: If no value is specified, the default value **application/json** is used.

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Table 6-77 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-78 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 6-79 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that the server-side encryption used for objects is SSE-KMS. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 6-80 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 6-81 obs_put_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
put_object_data_callback	**obs_put_object_data_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
progress_callback	obs_progress_callback_internal *	Yes	**Explanation:** Pointer to the progress callback function. **Restrictions**: None

Table 6-82 obs_put_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-83 obs_progress_callback_internal

Parameter	Type	Mandatory (Yes/No)	Description
now	uint64_t	Yes	**Explanation:** Number of bytes that have been uploaded. **Restrictions**: None **Value range**: None **Default value**: None
total	uint64_t	Yes	**Explanation:** Total number of bytes to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-84 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 6-85 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-86 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-87 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-88 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-89 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-90 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Creating a Folder

This example creates a folder, which is an object whose size is 0 and whose name ends with a slash (/).

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following code shows how to create a folder, which is an object whose size is 0 and whose name
ends with a slash (/):
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
```

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```
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_folder/";
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    put_object(&options, key, 0, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
```

```
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
```

Helpful Links

- To create a folder in OBS by this API is essentially to create an object whose size is 0 and whose name ends with a slash (/). **Uploading Objects - PUT**
- **OBS Error Codes**

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6.4 Uploading an Object - Resumable (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

The resumable upload is an encapsulated and enhanced version of the multipart upload used for dealing with possible upload failures of large files when the network connection is unstable or a program crashes. This API splits the file into multiple parts and uploads them individually. The upload result of each part is recorded in a checkpoint file in real time. A success message is returned only when all parts are uploaded. If any parts fail, an error message is returned telling you to call the API again to upload the failed parts. Since the checkpoint file contains the progress of each part, it saves you uploading all parts again in the event of an error.

You can call **upload_file** to perform a resumable upload.

Restrictions

- To upload an object, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- The file uploaded by the resumable upload API must be at least 100 KB.
- You must enable the resumable upload option when you use this API, so the progress of the last upload can be obtained for upload resumption.

Method

```
void upload_file(const obs_options *options, char *key, server_side_encryption_params *encryption_params,
    obs_upload_file_configuration *upload_file_config,
    obs_upload_file_server_callback server_callback,
    obs_upload_file_response_handler *handler,
    void *callback_data);
```

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Request Parameters

Table 6-91 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
upload_file_config	**obs_upload_file_configuration** *	Yes	**Explanation:** Configuration of the file upload. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
encryption_params	server_side_encryption_params *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None
handler	obs_upload_file_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-92 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
request_options	obs_http_request_option	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** Custom callback data. **Restrictions**: None

Table 6-93 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: See **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 6-94 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 6-95 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 6-96 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 6-97 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 6-98 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-99 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-100 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-101 obs_upload_file_configuration

Parameter	Type	Mandatory (Yes/No)	Description
upload_file	char *	Yes	**Explanation:** Path of the local file to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
part_size	uint64_t	No	**Explanation:** Part size, in bytes **Restrictions**: None **Value range**: 100 KB to 5 GB **Default value**: 5 MB
check_point_file	char *	No	**Explanation:** Path of the file that records the upload progress. This parameter is effective only in the resumable mode. If the value of this parameter is left blank, the file will be in the same directory as the local file to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
enable_check_point	int	No	**Explanation:** Whether to enable the resumable mode **Restrictions**: None **Value range**: • **0**: The resumable mode is disabled. In this case, this API works as a multipart upload API, and no checkpoint files are generated. • **1**: The resumable mode is enabled. **Default value**: **0**: disabled
task_num	int	No	**Explanation:** Maximum number of parts that can be uploaded concurrently **Restrictions**: None **Value range**: None **Default value**: 1
pause_upload_flag	int *	No	**Explanation:** Flag indicating that the upload is paused. **Restrictions**: The value cannot be **NULL**. If the value is **1**, the upload is paused. **Value range**: None **Default value**: None
put_properties	**obs_put_properties** *	Yes	**Explanation:** Object properties. **Restrictions**: None

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Table 6-102 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • The value must be an integer greater than 0. • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 6-103 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 6-104 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 6-105 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • The value must be an integer greater than 0. • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 6-106 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 6-107 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 6-108 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.

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Parameter	Type	Mandatory (Yes/No)	Description
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-109 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 6-110 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.

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Parameter	Type	Mandatory (Yes/No)	Description
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 6-111 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

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Table 6-112 obs_upload_file_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
upload_file_callback	**obs_upload_file_callback** *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None
progress_callback	**obs_progress_callback** *	Yes	**Explanation:** Pointer to the progress callback function. **Restrictions**: None

Table 6-113 obs_upload_file_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Request status **Restrictions**: None **Value range**: For details, see **obs_status**.
result_message	char *	Yes	**Explanation:** Upload result **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
part_count_return	int	Yes	**Explanation:** Number of parts. **Restrictions**: None **Value range**: None **Default value**: None
upload_info_list	**obs_upload_file_part_info** *	Yes	**Explanation:** Part information. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-114 obs_upload_file_part_info

Parameter	Type	Mandatory (Yes/No)	Description
part_num	**obs_response_handler** *	Yes	**Explanation:** Part number **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	Yes	**Explanation:** Start position of part creation. **Restrictions**: None **Value range**: None **Default value**: None
part_size	uint64_t	Yes	**Explanation:** Part size. **Restrictions**: None **Value range**: None **Default value**: None
status_return	part_upload_status	Yes	**Explanation:** Part status. **Restrictions**: None **Value range**: For details, see part_upload_status.

Table 6-115 part_upload_status

Value	Description
UPLOAD_NOTSTART	The upload has not started.
UPLOADING	Uploading.
UPLOAD_FAILED	The upload fails.
UPLOAD_SUCCESS	The file is uploaded.
STATUS_BUTT	Default status.

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Table 6-116 obs_progress_callback

Parameter	Type	Mandatory (Yes/No)	Description
progress	double	Yes	**Explanation:** Progress percentage. **Restrictions**: None **Value range**: None **Default value**: None
uploadedSize	uint64_t	Yes	**Explanation:** Number of bytes that have been uploaded. **Restrictions**: None **Value range**: None **Default value**: None
fileTotalSize	uint64_t	Yes	**Explanation:** Total number of bytes to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-117 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 6-118 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-119 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-120 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None

Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: The value must contain 32 characters. **Value range**: None **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-121 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-122 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-123 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Resumable Upload

This example calls the resumable upload API to upload a file.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
void uploadFileResultCallback(obs_status status,
    char *resultMsg,
    int partCountReturn,
    obs_upload_file_part_info * uploadInfoList,
    void *callbackData);
void test_progress_callback(double progress, uint64_t uploadedSize, uint64_t fileTotalSize, void
*callback_data);
int main()
{
    // The following example shows how to use the resumable upload API to upload a file:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
```

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```
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    //Initialize the put_properties structure.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    obs_upload_file_configuration uploadFileInfo;
    memset(&uploadFileInfo, 0, sizeof(obs_upload_file_configuration));
    uploadFileInfo.check_point_file = 0;
    uploadFileInfo.enable_check_point = 1;
    uploadFileInfo.part_size = 5L * 1024 * 1024;
    uploadFileInfo.task_num = 8;
    uploadFileInfo.upload_file = "./example_local_file_to_upload.tar";
    uploadFileInfo.put_properties = &put_properties;
    int pause_upload_flag = 0;
    uploadFileInfo.pause_upload_flag = &pause_upload_flag;
    // Name of the object to be uploaded in resumable upload
    char *key = "example_upload_file_object_key";
    obs_status ret_status = OBS_STATUS_BUTT;
    //Callback function
    obs_upload_file_response_handler Handler =
    {
        {&response_properties_callback, &response_complete_callback},
        &uploadFileResultCallback, &test_progress_callback
    };
    obs_upload_file_server_callback server_callback;
    init_server_callback(&server_callback);
    initialize_break_point_lock();
    upload_file(&options, key, 0, &uploadFileInfo, server_callback, &Handler, &ret_status);
    deinitialize_break_point_lock();
    if (OBS_STATUS_OK == ret_status) {
        printf("test upload file successfully. \n");
    }
    else
    {
        printf("test upload file failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
```

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```
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *data =
            (obs_status *)callback_data;
        *data = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
```

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```
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
//uploadFileResultCallback is used as an example here. The printf statements can be replaced with
custom logging print statements.
void uploadFileResultCallback(obs_status status,
    char *resultMsg,
    int partCountReturn,
    obs_upload_file_part_info * uploadInfoList,
    void *callbackData)
{
    int i = 0;
    obs_upload_file_part_info * pstUploadInfoList = uploadInfoList;
    printf("status return is %d(%s)\n", status, obs_get_status_name(status));
    printf("%s", resultMsg);
    printf("partCount[%d]\n", partCountReturn);
    for (i = 0; i < partCountReturn; i++)
    {
        printf("partNum[%d],startByte[%llu],partSize[%llu],status[%d]\n",
            pstUploadInfoList->part_num,
            pstUploadInfoList->start_byte,
            pstUploadInfoList->part_size,
            pstUploadInfoList->status_return);
        pstUploadInfoList++;
    }
    if (callbackData) {
        obs_status* retStatus = (obs_status*)callbackData;
        (*retStatus) = status;
    }
}
static double g_progress = 0;
void test_progress_callback(double progress, uint64_t uploadedSize, uint64_t fileTotalSize, void
*callback_data) {
    if (progress == 100 || (g_progress < progress && progress - g_progress > 2)) {
        printf("test_progress_callback progress=%f  uploadedSize=%llu fileTotalSize=%llu  callback_data=%p
\n", progress, uploadedSize, fileTotalSize, callback_data);
        g_progress = progress;
    }
}
```

Helpful Links

- (GitHub) Sample Code
- OBS Error Codes
- FAQ for Object Upload Failure

6.5 Uploading an Object - Append (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

This API uploads a file or folder to an existing OBS bucket. You can upload text, pictures, videos, or any other types of files.

This API adds data to the end of a specified object. If there is no object with the same key found in the bucket, a new object is created.

The latest modification time of the object is updated each time an upload is appended.

Restrictions

- To upload an object, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- If SSE-C is used for server-side encryption, you must carry request headers such as **x-obs-server-side-encryption** in each append upload.
- If SSE-KMS is used for server-side encryption, you only need to carry request headers such as **x-obs-server-side-encryption** when you first call this API to upload an object and when there is no existing object with the same name in the bucket.
- The size of each append upload cannot exceed 5 GB.
- The maximum number of append uploads for each appendable object is 10,000.
- If the storage class is COLD (Archive), this API cannot be called.
- If cross-region replication is configured for a bucket, this API cannot be called.
- Objects in parallel file systems are not appendable.
- Objects uploaded using **put_object**, referred to as normal objects, can overwrite objects uploaded using **append_object**, referred to as appendable objects. Data cannot be appended to an appendable object anymore once the object has been overwritten by a normal object.
- When you upload an object for the first time in appendable mode, an exception will be reported (HTTP status code **409**) if a common object with the same name exists.
- The ETag returned for the append upload is the ETag for the appended content, rather than that of the whole object.

Method

```
void append_object(const obs_options *options, char *key, uint64_t content_length, const char * position,
                   obs_put_properties *put_properties,server_side_encryption_params *encryption_params,
                   obs_append_object_handler *handler, void *callback_data);
```

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Request Parameters

Table 6-124 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.
position	char *	Yes	**Explanation:** Start position of the append **Restrictions**: None **Value range**: None **Default value**: None
put_properties	**obs_put_properties***	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_append_object_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-125 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 6-126 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 6-127 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 6-128 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 6-129 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 6-130 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 6-131 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-132 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-133 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-134 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • The value must be an integer greater than 0. • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 6-135 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 6-136 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 6-137 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-138 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Value range**: • The value must be an integer greater than 0. • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned.
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned.
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 6-139 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 6-140 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 6-141 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.

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Parameter	Type	Mandatory (Yes/No)	Description
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-142 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 6-143 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.

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Parameter	Type	Mandatory (Yes/No)	Description
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 6-144 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

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Table 6-145 obs_append_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
append_object_data_callback	**obs_append_object_data_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

Table 6-146 obs_append_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-147 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 6-148 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-149 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-150 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in a request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-151 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-152 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.

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Value	Description
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Uploading an Object - Append

This example calls **append_object** to perform the append upload.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct put_buffer_object_callback_data
{
    char *put_buffer;
    uint64_t buffer_size;
    uint64_t cur_offset;
    obs_status ret_status;
} put_buffer_object_callback_data;
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data);
char* generate_upload_buffer(uint64_t buffer_size);
int main()
{
    // The following code shows how to use append_object to perform the append upload:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
```

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```
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    //Initialize the structure for storing the uploaded data.
    put_buffer_object_callback_data data;
    memset(&data, 0, sizeof(put_buffer_object_callback_data));
    // Set the buffer size.
    data.buffer_size = 10 * 1024 * 1024;
    // Create a simulated data buffer for the streaming upload and assign the value to the data upload
structure.
    data.put_buffer = generate_upload_buffer(data.buffer_size);
    if (NULL == data.put_buffer) {
        printf("generate put buffer failed. \n");
        return;
    }
    // Name of the object to be uploaded
    char *key = "example_put_file_test_append";
    // The start position of the append upload
    char *position = "0";
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_buffer_complete_callback },
          &put_buffer_data_callback
    };
    append_object(&options, key, data.buffer_size, position, &put_properties,
        0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("append object from buffer successfully. \n");
    }
    else
    {
        printf("append object from buffer failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
```

```
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        put_buffer_object_callback_data *data = (put_buffer_object_callback_data *)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
```

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```
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data)
{
    put_buffer_object_callback_data *data =
        (put_buffer_object_callback_data *)callback_data;
    int toRead = 0;
    if (data->buffer_size) {
        toRead = ((data->buffer_size > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->buffer_size);
        memcpy_s(buffer, buffer_size, data->put_buffer + data->cur_offset, toRead);
    }
    uint64_t originalContentLength = data->buffer_size;
    data->buffer_size -= toRead;
    data->cur_offset += toRead;
    if (data->buffer_size) {
        printf("%llu bytes remaining ", (unsigned long long)data->buffer_size);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->buffer_size) * 100) / originalContentLength));
    }
    return toRead;
}
// Create a simulated streaming upload buffer.
char* generate_upload_buffer(uint64_t buffer_size) {
    void* upload_buffer = NULL;
    if (buffer_size > 0) {
        upload_buffer = malloc(buffer_size);
        if (upload_buffer != NULL) {
            memset(upload_buffer, 't', buffer_size);
        }
    }
    return upload_buffer;
}
```

Helpful Links

- **Appending an Object**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Upload Failure**

6.6 Modifying an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API modifies the content of an object from the specified position.

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Restrictions

- This API is currently available only for parallel file systems, not for object buckets. For details about how to create a parallel file system, see **Creating a Bucket (SDK for C)**.
- To modify an object, you must be the PFS owner or have the required permission (**obs:bucket:PutObject** in IAM or **PutObject** in a policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- When you call this API for the first time, if the object to be modified does not exist, an error (HTTP status code: 404) will be reported.

Method

```
void modify_object(const obs_options *options, char *key, uint64_t content_length, uint64_t position,
                   obs_put_properties *put_properties,server_side_encryption_params *encryption_params,
                   obs_modify_object_handler *handler, void *callback_data);
```

Request Parameters

Table 6-153 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.
position	char *	Yes	**Explanation:** Start position of the append **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
put_properties	obs_put_properties*	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	server_side_encryption_params *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None **Value range**: None **Default value**: None
handler	obs_modify_object_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-154 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 6-155 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 6-156 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 6-157 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 6-158 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 6-159 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 6-160 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-161 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-162 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-163 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 6-164 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 6-165 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 6-166 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-167 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 6-168 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 6-169 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 6-170 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters **Restrictions**: None **Value range**: None **Default value**: None

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Table 6-171 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 6-172 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 6-173 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 6-174 obs_modify_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	obs_response_handler *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
modify_object_data_callback	obs_modify_object_data_callback *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

Table 6-175 obs_modify_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-176 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 6-177 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-178 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-179 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-180 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 6-181 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.

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Value	Description
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Modifying an Object

This example modifies an object using **modify_object**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct put_buffer_object_callback_data
{
    char *put_buffer;
    uint64_t buffer_size;
    uint64_t cur_offset;
    obs_status ret_status;
} put_buffer_object_callback_data;
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data);
char* generate_upload_buffer(uint64_t buffer_size);
int main()
{
    // The following code shows how to use the modify_object API to modify an object (applicable only to objects in parallel file systems):
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
```

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```
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char * bucketName = "example-posix-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    //Initialize the structure for storing the uploaded data.
    put_buffer_object_callback_data data;
    memset(&data, 0, sizeof(put_buffer_object_callback_data));
    // Set the buffer size.
    data.buffer_size = 10 * 1024 * 1024;
    // Create a simulated data buffer for the streaming upload and assign the value to the data upload
structure.
    data.put_buffer = generate_upload_buffer(data.buffer_size);
    if (NULL == data.put_buffer) {
        printf("generate put buffer failed. \n");
        return;
    }
    // Name of the object to be uploaded
    char *key = "example_put_file_test_modify";
    // Start position of the modify operation.
    char *position = "0";
    obs_put_object_handler modify0bjectHandler =
    {
        { &response_properties_callback, &put_buffer_complete_callback },
          &put_buffer_data_callback
    };
    modify_object(&options, key, data.buffer_size, position, &put_properties,
        0, &modify0bjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("modify object from buffer successfully. \n");
    }
    else
    {
        printf("modify object from buffer failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
```

```
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        put_buffer_object_callback_data *data = (put_buffer_object_callback_data *)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
```

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```
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data)
{
    put_buffer_object_callback_data *data =
        (put_buffer_object_callback_data *)callback_data;
    int toRead = 0;
    if (data->buffer_size) {
        toRead = ((data->buffer_size > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->buffer_size);
        memcpy_s(buffer, buffer_size, data->put_buffer + data->cur_offset, toRead);
    }
    uint64_t originalContentLength = data->buffer_size;
    data->buffer_size -= toRead;
    data->cur_offset += toRead;
    if (data->buffer_size) {
        printf("%llu bytes remaining ", (unsigned long long)data->buffer_size);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->buffer_size) * 100) / originalContentLength));
    }
    return toRead;
}
// Create a simulated streaming upload buffer.
char* generate_upload_buffer(uint64_t buffer_size) {
    void* upload_buffer = NULL;
    if (buffer_size > 0) {
        upload_buffer = malloc(buffer_size);
        if (upload_buffer != NULL) {
            memset(upload_buffer, 't', buffer_size);
        }
    }
    return upload_buffer;
}
```

Helpful Links

- **Modifying an Object**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Modification**

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7 Object Download (SDK for C)

7.1 Downloading an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API downloads an object as text from OBS to your local computer.

Restrictions

- To download an object, you must be the bucket owner or have the required permission (**obs:object:GetObject** in IAM or **GetObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- Objects in the Archive storage class can be downloaded only when they are in the **Restored** status.

Method

```
void get_object(const obs_options *options, obs_object_info *object_info,
                obs_get_conditions *get_conditions,
                server_side_encryption_params *encryption_params,
                obs_get_object_handler *handler, void *callback_data);
```

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Request Parameters

Table 7-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
get_conditions	**obs_get_conditions** *	Yes	**Explanation:** Sets filter conditions of the object and read range. **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Obtains the decryption settings of an object. **Restrictions**: None
handler	**obs_get_object_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 7-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 7-4 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 7-5 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-6 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 7-7 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 7-8 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 7-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-11 obs_get_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_object_data_callback	**obs_get_object_data_callback** *	Yes	**Explanation:** Pointer to the callback function, which is used to copy the data to be downloaded from the data buffer to the custom callback data. **Restrictions**: None

Table 7-12 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 7-13 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-14 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-15 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-16 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-17 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-18 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 7-19 obs_get_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
buffer	char *	Yes	**Explanation:** Data buffer to be downloaded. Data in this buffer is copied to **callback_data** to download data. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-20 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-21 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 7-22 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-23 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 7-24 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 7-25 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Code Examples: Downloading an Object

This example uses **get_object** to download an object as a local file.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
int main()
{
    // The following code shows how to use the get_object function to download an object to a local file:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test";
    object_info.version_id = NULL;
    //Set the structure for storing the downloaded object data based on service requirements.
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
```

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```
    data.outfile = write_to_file(file_name);
    // Define parameters for range-based download.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    // Download start position. The default value is 0, indicating that the download starts from byte 0.
    getcondition.start_byte = 0;
    // Download length. The default value is 0, indicating that the object is downloaded until the end.
    // getcondition.byte_count = 0;
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&options, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
```

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```
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

NOTE

- You can perform operations on the input streams of an object to read and write the object contents to a local file or to the memory.
- **getcondition** can be left empty, indicating that the entire object is downloaded.

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7.2 Downloading an Object - Conditional (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API returns the objects that meet one or more conditions. If there are no objects that meet the specified conditions, an error is returned.

Restrictions

- To download an object, you must be the bucket owner or have the required permission (**obs:object:GetObject** in IAM or **GetObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- Objects in the Archive storage class can be downloaded only when they are in the **Restored** status.

Method

```
void get_object(const obs_options *options, obs_object_info *object_info,
    obs_get_conditions *get_conditions,
    server_side_encryption_params *encryption_params,
    obs_get_object_handler *handler, void *callback_data);
```

Request Parameters

Table 7-26 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
get_conditions	**obs_get_conditions** *	Yes	**Explanation:** Sets filter conditions of the object and read range. **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Obtains the decryption settings of an object. **Restrictions**: None
handler	**obs_get_object_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-27 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 7-28 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 7-29 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 7-30 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-31 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 7-32 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 7-33 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 7-34 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-35 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-36 obs_get_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_object_data_callback	**obs_get_object_data_callback** *	Yes	**Explanation:** Pointer to the callback function, which is used to copy the data to be downloaded from the data buffer to the custom callback data. **Restrictions**: None

Table 7-37 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 7-38 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-39 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-40 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-41 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-42 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-43 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 7-44 obs_get_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
buffer	char *	Yes	**Explanation:** Data buffer to be downloaded. Data in this buffer is copied to **callback_data** to download data. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-45 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-46 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 7-47 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-48 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 7-49 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 7-50 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Code Examples: Conditional Download

This example downloads an object to the local host with conditions using **get_object**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
int main()
{
    // The following code shows how to use the get_object function to download an object to a local file:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test";
    object_info.version_id = NULL;
    //Set the structure for storing the downloaded object data based on service requirements.
    get_object_callback_data data;
```

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```
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    // Define parameters for range-based download.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    getcondition.if_match_etag = "34a7ef8cc629583f3cdd882791f31351";
    // Set the download condition if_modified_since to timestamp 0.
    getcondition.if_modified_since = 0;
    getcondition.if_not_match_etag = "34a7ef8cc629583f3cdd882791f31350";
    // Set the download condition if_modified_since to timestamp 2147483647.
    getcondition.if_not_modified_since = INT_MAX;
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&options, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
```

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```
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

Helpful Links

- **Downloading Objects**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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- **FAQ for Object Download Failure**

7.3 Restoring an Archive Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

To obtain the content of an object in the Archive storage class, you need to restore the object first and then you can download it. After an object is restored, a copy of the object is saved in the Standard storage class. By doing so, the object in the Archive storage class and its copy in the Standard storage class co-exist in the bucket. The copy will be automatically deleted once its retention period ends.

This API is used to restore Archive objects in a specified bucket.

Restrictions

- To restore an Archive object, you must be the bucket owner or have the required permission (**obs:object:RestoreObject** in IAM or **RestoreObject** in a bucket policy.) For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- To prolong the validity period of the Archive data restored, you can repeatedly restore the data, but you will be billed for each restore. After a restoration, the validity period of Standard object copies will be extended, and you need to pay for storing these copies during the extended period.

Method

```
void restore_object(const obs_options *options, obs_object_info *object_info, const char *days, obs_tier tier,const obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 7-51 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
days	char *	Yes	**Explanation:** Retention period of the restored object **Restrictions**: None **Value range**: The value ranges from 1 to 30, in days. **Default value**: None
tier	**obs_tier**	No	**Explanation:** Restore options: **obs_tier.OBS_TIER_EXPEDITED** or **obs_tier.OBS_TIER_STANDARD** **Restrictions**: None **Value range**: For details, see **obs_tier**.

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Parameter	Type	Mandatory (Yes/No)	Description
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-52 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 7-53 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 7-54 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 7-55 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-56 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 7-57 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 7-58 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 7-59 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-60 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-61 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: • The name of each object in a bucket must be unique. • The object specified must be in the Archive storage class. Otherwise, an error is reported. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-62 obs_tier

Value	Description
OBS_TIER_NULL	Default invalid value.
OBS_TIER_STANDARD	It indicates that objects can be restored from Archive storage within 3 to 5 hours.

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Value	Description
OBS_TIER_EXPEDITED	It indicates that objects can be quickly restored from Archive storage within 1 to 5 minutes.

Table 7-63 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 7-64 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-65 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-66 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-67 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-68 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-69 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Restoring and Downloading an Archive Object

This example calls **restore_object** to restore an Archive object and then use the **get_object** function to download the object to a local file. (Note that the restoration may take a long time.)

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
void wait_until_restore_complete(obs_options* options, obs_object_info* object_info,
server_side_encryption_params* sse);
int main()
{
    // The following code shows how to use the get_object function to download an object in OBS Archive
```

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to a local file:

```
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test_restore";
    object_info.version_id = NULL;
    // Set the response callback function.
    obs_response_handler handler =
    {
      &response_properties_callback, &response_complete_callback
    };
    // Restore the object.
    obs_tier tier = OBS_TIER_EXPEDITED;
    obs_status ret_status = OBS_STATUS_BUTT;
    const char* storedDays = "1";
    options.request_options.auth_switch = OBS_OBS_TYPE;
    restore_object(&options, &object_info, storedDays, tier, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("restore object successfully. \n");
    }
    else
    {
        printf("restore object failed(%s).\n", obs_get_status_name(ret_status));
        return;
    }
    // Wait until the object is restored.
    wait_until_restore_complete(&options, &object_info, NULL);
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    //Set the structure for storing the downloaded object data based on service requirements.
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&options, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
```

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```
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
typedef struct test_restore_info {
    char restore_info[128];
    obs_status status;
}test_restore_info;
void response_complete_callback_restore(obs_status status, const obs_error_details *error, void
*callback_data)
{
    if (callback_data) {
        test_restore_info *data =
            (test_restore_info *)callback_data;
        data->status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
static obs_status response_properties_callback_restore(const obs_response_properties *properties, void
*callback_data)
{
    if (callback_data) {
        test_restore_info *data =
            (test_restore_info *)callback_data;
        if (properties->restore != NULL) {
            strcpy(data->restore_info, properties->restore);
        }
    }
    else {
        printf("Callback_data is NULL");
    }
}
void wait_until_restore_complete(obs_options* options, obs_object_info* object_info,
server_side_encryption_params* sse) {
    test_restore_info restore_info;
    // Set the response callback function.
    obs_response_handler handler =
```

```
    {
      &response_properties_callback_restore, &response_complete_callback_restore
    };
    do {
        memset(restore_info.restore_info, 0, sizeof(restore_info.restore_info));
        restore_info.status = OBS_STATUS_BUTT;
        get_object_metadata(options, object_info, sse, &handler, &restore_info);
        char* prefix = "ongoing-request=\"false\", expiry-date=";
        // Check whether the character string starts with a specified character.
        if (strstr(restore_info.restore_info, prefix) == restore_info.restore_info) {
            printf("restore_info.restore_info:%s\n", restore_info.restore_info);
            break;
        }
        else {
            printf("restore_info.restore_info:%s\n", restore_info.restore_info);
        }
        Sleep(6 * 1000);
    } while (1);
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *data =
            (obs_status *)callback_data;
        *data = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
```

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```
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
    print_error_details(error);
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

Helpful Links

- **Restoring Archive Objects**

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- **(GitHub) Sample Code**
- **OBS Error Codes**

7.4 Downloading an Object - Resumable (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Downloading large files often fails due to an unstable network or program breakdown. It is a waste of resources to download files again. Moreover, the restarted download may still fail due to an unstable network. To resolve such issues, the resumable download API splits the file to be downloaded into multiple parts and downloads them separately. The download result of each part is recorded in a checkpoint file in real time. Only when all parts are downloaded is a message indicating the download is successful returned. If any parts fail to be downloaded, a message is returned telling you to call the API again to download the failed parts. Since the checkpoint file contains the progress of all parts, it helps you avoid downloading all parts in re-downloads, so that you can enjoy a cost-effective, efficient download.

You can use **download_file** to perform a resumable download.

Restrictions

- To download an object, you must be the bucket owner or have the required permission (**obs:object:GetObject** in IAM or **GetObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- The API for resumable download, which is implemented based on **partial download**, is an encapsulated and enhanced version of partial download.
- By resuming a failed download from where it failed, this API helps save resources. In addition, parts can be downloaded concurrently, which helps speed up the download. During the download process, you do not need to take care of internal service details, such as the creation and deletion of checkpoint files, division of objects, or concurrent downloads of parts.

Method

```
void download_file(const obs_options *options, char *key, char* version_id,
    obs_get_conditions *get_conditions,
    server_side_encryption_params *encryption_params,
    obs_download_file_configuration * download_file_config,
    obs_download_file_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 7-70 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
version_id	char *	Yes	**Explanation:** Object version ID. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_file_config	**obs_download_file_configuration** *	Yes	**Explanation:** Configuration description of the file to be downloaded. **Restrictions**: None
get_conditions	**obs_get_conditions** *	Yes	**Explanation:** Sets filter conditions of the object and read range. **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Decryption settings of the downloaded object. **Restrictions**: None
handler	**obs_download_file_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-71 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 7-72 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Value range**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Value range**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Value range**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 7-73 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 7-74 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-75 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 7-76 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 7-77 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 7-78 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-79 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-80 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 7-81 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	**image_process_mode_type**	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-82 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 7-83 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 7-84 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

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Table 7-85 obs_download_file_configuration

Parameter	Type	Mandatory (Yes/No)	Description
downLoad_file	char *	Yes	**Explanation:** Local path to which the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None
part_size	uint64_t	No	**Explanation:** Part size, in bytes **Restrictions**: None **Value range**: None **Default value**: None
check_point_file	char *	No	**Explanation:** Path of the file that records the upload progress. This parameter is effective only in the resumable mode. **Restrictions**: ● If the value of this parameter is left blank, the file will be in the same directory as the local file to be uploaded. ● This parameter is valid only when **enable_check_point** is set to **1**. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
enable_check_point	int	No	**Explanation:** Whether to enable the resumable mode **Restrictions**: None **Value range**: • **0**: The resumable mode is disabled. In this case, this API works as a multipart transmission API, and no checkpoint files are generated. • **1**: The resumable mode is enabled. **Default value**: **0**: disabled
task_num	int	No	**Explanation:** Maximum number of parts that can be uploaded concurrently Use this parameter to configure how many concurrent tasks there can be in downloading a single object. **Restrictions**: None **Value range**: None **Default value**: 1

Table 7-86 obs_download_file_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	obs_response_handler *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_file_callback	**obs_download_file_callback** *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 7-87 obs_download_file_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Request status **Restrictions**: None **Value range**: For details, see **obs_status**.
result_message	char *	Yes	**Explanation:** Download result. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-88 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 7-89 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-90 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-91 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None

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Parameter	Type	Mandatory (Yes/No)	Description
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-92 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-93 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-94 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Resumable Download

This example calls **download_file** to perform the resumable download.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
**callback_data** (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of **obs_status** and **obs_error_details** in the callback can
be recorded in **callback_data** (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
void downloadFileResultCallback(obs_status status,
    char *resultMsg,
    int partCountReturn,
    obs_download_file_part_info * downloadInfoList,
    void *callbackData);
int main()
{
    // The following code shows how to use **download_file** to perform the resumable download:
    // Call the **obs_initialize** method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (**host_name**), access keys
(**access_key_id** and **access_key_secret**), bucket name (**bucket_name**), and bucket storage class
(**storage_class**).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for **host_name**. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
```

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```
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the object to be downloaded.
    char* key = "example_get_file_test";
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    // Initialize getConditions.
    obs_get_conditions getConditions;
    memset(&getConditions, 0, sizeof(obs_get_conditions));
    init_get_properties(&getConditions);
    // Object information in the resumable download
    obs_download_file_configuration downloadFileConfig;
    memset(&downloadFileConfig, 0, sizeof(obs_download_file_configuration));
    // Size of the object parts
    uint64_t downloadSliceSize = 5L * 1024 * 1024;
    downloadFileConfig.check_point_file = NULL;
    downloadFileConfig.enable_check_point = 1;
    downloadFileConfig.part_size = downloadSliceSize;
    downloadFileConfig.task_num = 10;
    downloadFileConfig.downLoad_file = file_name;
    // Set the response callback function.
    obs_download_file_response_handler Handler =
    {
        {&response_properties_callback, &response_complete_callback},
        &downloadFileResultCallback
    };
    char* versionId = NULL;
    server_side_encryption_params* sse = NULL;
    initialize_break_point_lock();
    obs_status ret_status = OBS_STATUS_BUTT;
    download_file(&options, key, versionId, &getConditions, sse, &downloadFileConfig,
        &Handler, &ret_status);
    deinitialize_break_point_lock();
    if (OBS_STATUS_OK == ret_status) {
        printf("test download file successfully. \n");
    }
    else
    {
        printf("test download file failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
```

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```
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

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```
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *data =
            (obs_status *)callback_data;
        *data = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
//downloadFileResultCallback is used as an example here. The printf statements can be replaced with custom logging print statements.
void downloadFileResultCallback(obs_status status,
    char *resultMsg,
    int partCountReturn,
    obs_download_file_part_info * downloadInfoList,
    void *callbackData)
{
    int i = 0;
    obs_download_file_part_info * pstDownloadInfoList = downloadInfoList;
    printf("status return is %d(%s)\n", status, obs_get_status_name(status));
    printf("%s", resultMsg);
    printf("partCount[%d]\n", partCountReturn);
    for (i = 0; i < partCountReturn; i++)
    {
        printf("partNum[%d],startByte[%llu],partSize[%llu],status[%d]\n",
            pstDownloadInfoList->part_num,
            pstDownloadInfoList->start_byte,
            pstDownloadInfoList->part_size,
            pstDownloadInfoList->status_return);
        pstDownloadInfoList++;
    }
    if (callbackData) {
        obs_status* retStatus = (obs_status*)callbackData;
        (*retStatus) = status;
    }
}
```

Helpful Links

- **Downloading Objects**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Download Failure**

7.5 Processing an Image (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API processes images in a stable, secure, efficient, easy, and cost-effective manner. If you are about to download images, you can pass relevant parameters

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to process images, such as cropping, resizing, or watermarking images, or converting the formats of images.

Restrictions

- To process and download an image, you must be the bucket owner or have the required permission (**obs:object:GetObject** in IAM or **GetObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- All image processing operations do not affect the original image.
- Archive storage does not support image processing.
- The processed image is directly returned to the browser for display. It is not stored in OBS, does not occupy storage space, and does not incur storage charges.
- Currently, image processing parameters can only be processed in the **image/commands** format.
- Image processing parameters can be processed in cascading mode. This indicates that multiple commands can be performed on an image in sequence.

Method

```
void get_object(const obs_options *options, obs_object_info *object_info,
    obs_get_conditions *get_conditions,
    server_side_encryption_params *encryption_params,
    obs_get_object_handler *handler, void *callback_data);
```

Request Parameters

Table 7-95 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
get_conditions	**obs_get_conditions** *	Yes	**Explanation:** Sets filter conditions of the object and read range. **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Obtains the decryption settings of an object. **Restrictions**: None
handler	**obs_get_object_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-96 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 7-97 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 7-98 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 7-99 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-100 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 7-101 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 7-102 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 7-103 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-104 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-105 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-106 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 7-107 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-108 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 7-109 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 7-110 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 7-111 obs_get_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_object_data_callback	**obs_get_object_data_callback** *	Yes	**Explanation:** Pointer to the callback function, which is used to copy the data to be downloaded from the data buffer to the custom callback data. **Restrictions**: None

Table 7-112 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 7-113 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-114 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 7-115 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-116 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-117 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 7-118 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 7-119 obs_get_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
buffer	char *	Yes	**Explanation:** Data buffer to be downloaded. Data in this buffer is copied to **callback_data** to download data. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Processing and Downloading an Image

This example calls the **get_object** function to process an image and download the processed object to a local file.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
int main()
{
    // The following code shows how to use the get_object function to process an image and download the
processed object to a local file:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
```

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```
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    options.bucket_options.protocol = OBS_PROTOCOL_HTTP;
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_image_process_get_file_test.png";
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_image_process_get_file_test.png";
    object_info.version_id = NULL;
    //Set the structure for storing the downloaded object data based on service requirements.
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    // Define parameters for range-based download.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    image_process_configure image_process_config;
    memset(&image_process_config, 0, sizeof(image_process_configure));
    getcondition.image_process_config = &image_process_config;
    getcondition.image_process_config->image_process_mode = obs_image_process_cmd;
    getcondition.image_process_config->cmds_stylename = "resize,m_fixed,w_100,h_100/rotate,90";
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&options, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
```

```
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
```

```
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

Helpful Links

- **Image Processing**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Image Processing**

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8 Object Management (SDK for C)

8.1 Setting Object Properties (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API sets properties for an object when uploading it. Object properties include the object length, MIME type, MD5 value (for verification), storage class, and custom object metadata. You can configure properties for an object that is being uploaded in streaming, file-based, or multipart mode or when **copying an object**.

Restrictions

- To configure object properties, you must be the bucket owner or have the required permission (**obs:object:ModifyObjectMetaData** in IAM or **ModifyObjectMetaData** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- An object can have multiple pieces of metadata. The size of the metadata cannot exceed 8 KB in total.
- Currently, metadata names only support ASCII characters. Non-ASCII characters must be Base64-encoded.
- If you do not set a storage class for an object, the object will inherit the storage class of its bucket by default.

Method

```
void set_object_metadata(const obs_options *options, obs_object_info *object_info,
    obs_put_properties *put_properties,
```

```
server_side_encryption_params *encryption_params,
obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 8-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
put_properties	**obs_put_properties***	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 8-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket properties comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: For details, see **Creating Access Keys**. **Value range**: None **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-4 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-5 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-6 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-7 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-8 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-11 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-12 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 8-13 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 8-14 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 8-15 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 8-16 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 8-17 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-18 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 8-19 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 8-20 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

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Table 8-21 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-22 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-23 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-24 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-25 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-26 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-27 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Setting the MIME Type for an Object

This example sets the MIME type when uploading a file. If the MIME type is not set, the C SDK will automatically identify the MIME type based on the extension of the file. For example, the MIME type of **.xml** files is **application/xml** and that of **.html** files is **text/html**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following code uses file upload as an example to describe how to set the MIME type for an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_put_file_test";
    // Uploaded file
    char file_name[256] = "./example_local_file_test.txt";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
```

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```
    &put_file_data_callback
};
// Set the MIME type.
put_properties.content_type = "text/plain";
put_object(&options, key, content_length, &put_properties, 0, &putobjectHandler, &data);
if (OBS_STATUS_OK == data.ret_status) {
    printf("put object from file successfully. \n");
}
else
{
    printf("put object failed(%s).\n",
        obs_get_status_name(data.ret_status));
}
if (data.infile != NULL) {
    fclose(data.infile);
}
// Release the allocated global resources.
obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
if (properties == NULL)
{
    printf("error! obs_response_properties is null!");
    if (callback_data != NULL)
    {
        obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
        printf("server_callback buf is %s, len is %llu",
            data->buffer, data->buffer_len);
        return OBS_STATUS_OK;
    }
    else {
        printf("error! obs_sever_callback_data is null!");
        return OBS_STATUS_OK;
    }
}
// Print the response.
#define print_nonnull(name, field)                              \
do {                                                    \
    if (properties-> field) {                               \
        printf("%s: %s\n", name, properties->field);        \
    }                                                   \
} while (0)
print_nonnull("request_id", request_id);
print_nonnull("request_id2", request_id2);
print_nonnull("content_type", content_type);
if (properties->content_length) {
    printf("content_length: %llu\n", properties->content_length);
}
print_nonnull("server", server);
print_nonnull("ETag", etag);
print_nonnull("expiration", expiration);
print_nonnull("website_redirect_location", website_redirect_location);
print_nonnull("version_id", version_id);
print_nonnull("allow_origin", allow_origin);
print_nonnull("allow_headers", allow_headers);
print_nonnull("max_age", max_age);
print_nonnull("allow_methods", allow_methods);
print_nonnull("expose_headers", expose_headers);
print_nonnull("storage_class", storage_class);
print_nonnull("server_side_encryption", server_side_encryption);
print_nonnull("kms_key_id", kms_key_id);
print_nonnull("customer_algorithm", customer_algorithm);
print_nonnull("customer_key_md5", customer_key_md5);
print_nonnull("bucket_location", bucket_location);
print_nonnull("obs_version", obs_version);
print_nonnull("restore", restore);
```

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```
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

Code Examples: Setting the Storage Class for an Object

This example sets the storage class for an object during upload.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
```

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```
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following example shows how to set the storage class for an object during upload:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    //Set the storage class to Archive.
    options.bucket_options.storage_class = OBS_STORAGE_CLASS_GLACIER;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_put_file_test_cold";
    // Uploaded file
    char file_name[256] = "./example_local_file_test.txt";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    put_object(&options, key, content_length, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
```

```
    if (data.infile != NULL) {
        fclose(data.infile);
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
```

```
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

Code Examples: Customizing Metadata for an Object

This example customizes metadata for an object during upload.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
```

```
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following example shows how to customize metadata for an object during upload:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_put_file_test_with_matadatas";
    // Uploaded file
    char file_name[256] = "./example_local_file_test.txt";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    //Set the custom metadata.
    obs_name_value example_matadatas[2] = {0};
    example_matadatas[0].name = "example-property1";
    example_matadatas[0].value = "example-property-value1";
    example_matadatas[1].name = "example-property2";
    example_matadatas[1].value = "example-property-value2";
    put_properties.meta_data = &example_matadatas;
    //Set the custom metadata count.
    put_properties.meta_data_count = 2;
    put_object(&options, key, content_length, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    if (data.infile != NULL) {
        fclose(data.infile);
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
```

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```
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
```

```
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

Helpful Links

- **Uploading Objects - PUT**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Upload Failure**

8.2 Obtaining Object Properties (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

Object metadata contains a set of name-value pairs that are used for describing and managing objects.

Currently, only the system-defined metadata is supported. System-defined metadata consists of system-controlled metadata and user-controlled metadata. The kind of metadata like **Last-Modified** is controlled by the system and cannot be modified. However, the kind of metadata configured for objects such as **ContentLanguage** can be modified by calling APIs.

This API sends a HEAD request for obtaining object metadata.

Restrictions

- To obtain object metadata, you must be the bucket owner or have the required permission (**obs:object:GetObject** in IAM or **GetObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_object_metadata(const obs_options *options, obs_object_info *object_info,
    server_side_encryption_params *encryption_params,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 8-28 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. For non-multi-version objects, set **version** to **0**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
encryption_params	server_side_encryption_params *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-29 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 8-30 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see obs_protocol. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see Creating Access Keys. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see Creating Access Keys. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see obs_storage_class. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-31 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-32 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-33 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-34 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-35 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-36 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-37 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-38 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-39 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.

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Parameter	Type	Mandatory (Yes/No)	Description
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 8-40 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

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Table 8-41 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-42 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-43 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-44 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in a request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-45 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-46 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-47 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Obtaining Object Properties

This example calls **get_object_metadata** to obtain object metadata.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to use get_object_metadata to obtain object metadata:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Object information
    obs_object_info object_info;
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test";
    object_info.version_id = NULL;
    // Set the response callback function.
    obs_response_handler response_handler =
    {
        // Object properties can be obtained from response_properties_callback.
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Obtain object properties.
    get_object_metadata(&options, &object_info, 0, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("get object metadata successfully. \n");
    }
    else
    {
        printf("get object metadata failed.\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
```

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```
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
```

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```
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

8.3 Setting a Pre-defined ACL During Object Upload (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Access control lists (ACLs) allow resource owners to grant other accounts the permissions to access resources. By default, only the resource owner has full control over resources when a bucket or object is created. That is, the bucket creator has full control over the bucket, and the object uploader has full control over the object. Other accounts do not have the permissions to access resources. If resource owners want to grant other accounts the read and write permissions on resources, they can use ACLs. ACLs grant permissions to accounts. After an account is granted permissions, both the account and its IAM users can access the resources.

For more information, see **ACLs**.

This API specifies a pre-defined ACL when uploading an object.

Restrictions

- To configure an object ACL, you must be the bucket owner or have the required permission (**obs:object:PutObjectAcl** in IAM or **PutObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.

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- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- An object can have a maximum of 100 rules in its ACL.

Method

```
void put_object(const obs_options *options, char *key, uint64_t content_length,
                obs_put_properties *put_properties,
                server_side_encryption_params *encryption_params,
                obs_put_object_handler *handler, void *callback_data);
```

Request Parameters

Table 8-48 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.
put_properties	**obs_put_properties***	Yes	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None
handler	**obs_put_object_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-49 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-50 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-51 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-52 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-53 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 8-54 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 8-55 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-56 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-57 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-58 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: None **Default value**: None
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	**obs_name_value***	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header, the response message must contain this header. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.

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Parameter	Type	Mandatory (Yes/No)	Description
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator. **Default value**: None
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

Table 8-59 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: None **Value range**: • An integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 8-60 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 8-61 obs_az_redundancy

Value	Description
OBS_REDUNDANCY_1AZ	By default, a single-AZ bucket is created.
OBS_REDUNDANCY_3AZ	A 3-AZ bucket is created.

Table 8-62 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

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Table 8-63 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **Restrictions**: None **Value range**: • application/x-www-form-urlencoded • application/json **Default value**: If no value is specified, the default value **application/json** is used.

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Table 8-64 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-65 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 8-66 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that the server-side encryption used for objects is SSE-KMS. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 8-67 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 8-68 obs_put_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
put_object_data_callback	**obs_put_object_data_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
progress_callback	obs_progress_callback_internal *	Yes	**Explanation:** Pointer to the progress callback function. **Restrictions**: None

Table 8-69 obs_put_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-70 obs_progress_callback_internal

Parameter	Type	Mandatory (Yes/No)	Description
now	uint64_t	Yes	**Explanation:** Number of bytes that have been uploaded. **Restrictions**: None **Value range**: None **Default value**: None
total	uint64_t	Yes	**Explanation:** Total number of bytes to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-71 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-72 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-73 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-74 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. If the object has no version ID, the value is **NULL**. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-75 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-76 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-77 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Setting a Pre-defined ACL When Uploading the Object

This example specifies a pre-defined ACL when uploading an object.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void put_buffer_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_buffer_object_callback_data
{
    char *put_buffer;
    uint64_t buffer_size;
    uint64_t cur_offset;
    obs_status ret_status;
} put_buffer_object_callback_data;
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data);
char* generate_upload_buffer(uint64_t buffer_size);
int main()
{
    // The following code shows how to specify a pre-defined ACL when uploading an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
```

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(**storage_class**).

```
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Name of the object to be uploaded
    char *key = "example_put_buffer_test_with_acl.txt";
    // Initialize the put_properties structure. You can set object properties through this structure.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Specify a pre-defined ACL.
    put_properties.canned_acl = OBS_CANNED_ACL_PUBLIC_READ_WRITE;
    // Callback data
    put_buffer_object_callback_data data;
    memset(&data, 0, sizeof(put_buffer_object_callback_data));
    // Set the buffer size.
    data.buffer_size = 10 * 1024 * 1024;
    // Create a simulated data buffer for the streaming upload and assign the value to the data upload structure.
    data.put_buffer = generate_upload_buffer(data.buffer_size);
    // Callback function
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_buffer_complete_callback },
        &put_buffer_data_callback
    };
    // Upload the data stream.
    put_object(&options, key, data.buffer_size, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
```

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```
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void put_buffer_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
```

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```
{
    if (callback_data) {
        put_buffer_object_callback_data *data = (put_buffer_object_callback_data *)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
int put_buffer_data_callback(int buffer_size, char *buffer, void *callback_data)
{
    put_buffer_object_callback_data *data =
        (put_buffer_object_callback_data *)callback_data;
    int toRead = 0;
    if (data->buffer_size) {
        toRead = ((data->buffer_size > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->buffer_size);
        memcpy_s(buffer, buffer_size, data->put_buffer + data->cur_offset, toRead);
    }
    uint64_t originalContentLength = data->buffer_size;
    data->buffer_size -= toRead;
    data->cur_offset += toRead;
    if (data->buffer_size) {
        printf("%llu bytes remaining ", (unsigned long long)data->buffer_size);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->buffer_size) * 100) / originalContentLength));
    }
    return toRead;
}
// Create a simulated streaming upload buffer.
char* generate_upload_buffer(uint64_t buffer_size) {
    void* upload_buffer = NULL;
    if (buffer_size > 0) {
        upload_buffer = malloc(buffer_size);
        if (upload_buffer != NULL) {
            memset(upload_buffer, 't', buffer_size);
        }
    }
    return upload_buffer;
}
```

Helpful Links

- **Configuring an Object ACL**
- **(GitHub) Sample Code**

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- **OBS Error Codes**

8.4 Setting a Pre-defined ACL for an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Access control lists (ACLs) allow resource owners to grant other accounts the permissions to access resources. By default, only the resource owner has full control over resources when a bucket or object is created. That is, the bucket creator has full control over the bucket, and the object uploader has full control over the object. Other accounts do not have the permissions to access resources. If resource owners want to grant other accounts the read and write permissions on resources, they can use ACLs. ACLs grant permissions to accounts. After an account is granted permissions, both the account and its IAM users can access the resources.

For more information, see **ACLs**.

This API sets a pre-defined ACL for an existing object in a specified bucket.

Restrictions

- To configure an object ACL, you must be the bucket owner or have the required permission (**obs:object:PutObjectAcl** in IAM or **PutObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- An object ACL supports a maximum of 100 **Grants**.

Method

```
void set_object_acl_by_head(const obs_options *options, obs_object_info *object_info,
    obs_canned_acl canned_acl, obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 8-78 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
canned_acl	**obs_canned_acl**	Yes	**Explanation:** Pre-defined ACL **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-79 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-80 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-81 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-82 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-83 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-84 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-85 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-86 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-87 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-88 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-89 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-90 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-91 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-92 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-93 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-94 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 8-95 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-96 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.

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Value	Description
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Code Examples: Setting a Pre-defined ACL for an Object

This example sets an object ACL using **set_object_acl_by_head**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
```

callback_data (custom callback data).

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```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to set an object ACL using set_object_acl_by_head:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    obs_canned_acl canned_acl = OBS_CANNED_ACL_PUBLIC_READ_WRITE;
    obs_object_info object_info;
    object_info.key = "example_get_file_test";
    object_info.version_id = NULL;
    // Set the pre-defined ACL for the object.
    set_object_acl_by_head(&options, &object_info, canned_acl, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set object acl by head successfully. \n");
    }
    else
    {
        printf("set object acl by head failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
```

```
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
```

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```
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

Helpful Links

- **Configuring an Object ACL**
- **(GitHub) Sample Code**
- **OBS Error Codes**

8.5 Setting a User-defined Object ACL (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Access control lists (ACLs) allow resource owners to grant other accounts the permissions to access resources. By default, only the resource owner has full control over resources when a bucket or object is created. That is, the bucket creator has full control over the bucket, and the object uploader has full control over the object. Other accounts do not have the permissions to access resources. If resource owners want to grant other accounts the read and write permissions on resources, they can use ACLs. ACLs grant permissions to accounts. After an account is granted permissions, both the account and its IAM users can access the resources.

For more information, see **ACLs**.

This API directly sets an ACL for an existing object in a specified bucket.

Restrictions

- To configure an object ACL, you must be the bucket owner or have the required permission (**obs:object:PutObjectAcl** in IAM or **PutObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- An object ACL supports a maximum of 100 **Grants**.

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Method

```
void set_object_acl(const obs_options *options, manager_acl_info *aclinfo, obs_response_handler *handler,
void *callback_data);
```

Request Parameters

Table 8-97 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options** *	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
aclinfo	**manager_acl_info** *	Yes	**Explanation:** Structure for managing ACL permission information **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-98 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 8-99 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-100 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-101 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-102 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-103 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-104 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-105 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-106 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-107 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-108 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-109 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-110 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-111 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-112 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-113 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 8-114 manager_acl_info

Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: If the object is not a versioned object, set the version to **NULL**.

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Parameter	Type	Mandatory (Yes/No)	Description
owner_id	char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_display_name	char *	Yes	**Explanation:** Display name of a user **Restrictions**: None **Value range**: None **Default value**: None
acl_grant_count_return	int *	Yes	**Explanation:** Length of the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
object_delivered	**obs_object_delivered**	Yes	**Explanation:** Whether the ACL of the bucket applies to its objects **Restrictions**: None **Value range**: For details, see **obs_object_delivered**. **Default value**: **OBJECT_DELIVERED_TRUE** (The ACL of the bucket applies to its objects.)

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Parameter	Type	Mandatory (Yes/No)	Description
acl_grants	obs_acl_grant *	Yes	**Explanation:** Permission information structure. **Restrictions**: None

Table 8-115 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-116 obs_object_delivered

Value	Description
OBJECT_DELIVERED_TRUE	The ACL of the bucket applies to its objects.
OBJECT_DELIVERED_FALSE	The ACL of the bucket does not apply to its objects.

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Table 8-117 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None
permission	**obs_permission**	Yes	**Explanation:** Bucket ACL. **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	**obs_bucket_delivered**	Yes	**Explanation:** Whether the bucket ACL is applied to the objects in the bucket **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: **BUCKET_DELIVERED_FALSE** (The ACL of the bucket does not apply to its objects.)

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Table 8-118 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 8-119 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

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Table 8-120 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

Code Examples: Setting a User-defined Object ACL

This example sets an object ACL using **set_object_acl**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to set an object ACL using set_object_acl:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Define an object ACL.
    manager_acl_info aclinfo;
    memset(&aclinfo, 0, sizeof(aclinfo));
    aclinfo.object_info.key = "example_get_file_test";
    aclinfo.object_info.version_id = NULL;
    aclinfo.owner_id = "1****************************a";
    // Set the ACL.
    int acl_grant_count = 1;
    aclinfo.acl_grant_count_return = &acl_grant_count;
    aclinfo.acl_grants = (obs_acl_grant*)malloc(sizeof(obs_acl_grant) * acl_grant_count);
    // Set the tenant ID of the authorized account (canonical_user.id).
    strcpy(aclinfo.acl_grants[0].grantee.canonical_user.id, "0****************************0");
    strcpy(aclinfo.acl_grants[0].grantee.canonical_user.display_name, "name1");
    aclinfo.acl_grants[0].grantee_type = OBS_GRANTEE_TYPE_CANONICAL_USER;
```

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```
    // Specify the ACL. The read permission is used as an example.
    aclinfo.acl_grants[0].permission = OBS_PERMISSION_READ;
    // Set the object ACL.
    set_object_acl(&options, &aclinfo, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set object acl successfully. \n");
    }
    else
    {
        printf("set object acl failed(%s).\n", obs_get_status_name(ret_status));
    }
    free(aclinfo.acl_grants);
    aclinfo.acl_grants = NULL;
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
```

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```
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

Helpful Links

- **Configuring an Object ACL**
- **(GitHub) Sample Code**
- **OBS Error Codes**

8.6 Obtaining the ACL of an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

Access control lists (ACLs) allow resource owners to grant other accounts the permissions to access resources. By default, only the resource owner has full control over resources when a bucket or object is created. That is, the bucket creator has full control over the bucket, and the object uploader has full control over the object. Other accounts do not have the permissions to access resources. If resource owners want to grant other accounts the read and write permissions on resources, they can use ACLs. ACLs grant permissions to accounts. After an account is granted permissions, both the account and its IAM users can access the resources.

For more information, see **ACLs**.

This API returns the ACL of an object.

Restrictions

- To obtain an object ACL, you must be the bucket owner or have the required permission (**obs:object:GetObjectAcl** in IAM or **GetObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_object_acl(const obs_options *options, manager_acl_info *aclinfo, obs_response_handler *handler,
void *callback_data);
```

Request Parameters

Table 8-121 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options** *	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
aclinfo	**manager_acl_info** *	Yes	**Explanation:** Structure for managing ACL permission information **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-122 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 8-123 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-124 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-125 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-126 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-127 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-128 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-129 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-130 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-131 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-132 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-133 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-134 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-135 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-136 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-137 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 8-138 manager_acl_info

Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: If the object is not a versioned object, set the version to **NULL**.

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Parameter	Type	Mandatory (Yes/No)	Description
owner_id	char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_display_name	char *	Yes	**Explanation:** Display name of a user **Restrictions**: None **Value range**: None **Default value**: None
acl_grant_count_return	int *	Yes	**Explanation:** Length of the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
object_delivered	**obs_object_delivered**	Yes	**Explanation:** Whether the ACL of the bucket applies to its objects **Restrictions**: None **Value range**: For details, see **obs_object_delivered**. **Default value**: **OBJECT_DELIVERED_TRUE** (The ACL of the bucket applies to its objects.)

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Parameter	Type	Mandatory (Yes/No)	Description
acl_grants	obs_acl_grant *	Yes	**Explanation:** Permission information structure. **Restrictions**: None

Table 8-139 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-140 obs_object_delivered

Value	Description
OBJECT_DELIVERED_TRUE	The ACL of the bucket applies to its objects.
OBJECT_DELIVERED_FALSE	The ACL of the bucket does not apply to its objects.

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Table 8-141 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None
permission	**obs_permission**	Yes	**Explanation:** Bucket ACL. **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	**obs_bucket_delivered**	Yes	**Explanation:** Whether the bucket ACL is applied to the objects in the bucket **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: **BUCKET_DELIVERED_FALSE** (The ACL of the bucket does not apply to its objects.)

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Table 8-142 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 8-143 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

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Table 8-144 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

Code Examples: Obtaining the ACL of an Object

This example obtains the ACL of an object using **get_object_acl**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in 
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
manager_acl_info* malloc_acl_info();
void free_acl_info(manager_acl_info **acl);
void print_acl(manager_acl_info* acl);
int main()
{
    // The following code shows how to obtain an object ACL using get_object_acl:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network 
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys 
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class 
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an 
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store 
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before 
running the code in this example, configure local environment variables ACCESS_KEY_ID and 
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    options.bucket_options.protocol = OBS_PROTOCOL_HTTP;
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Object ACL
    manager_acl_info *aclinfo = malloc_acl_info();
    aclinfo->object_info.key = "example_get_file_test";
    aclinfo->object_info.version_id = NULL;
    // Obtain the ACL.
    get_object_acl(&options, aclinfo, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("get object acl successfully. \n");
        print_acl(aclinfo);
```

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```
    }
    else
    {
        printf("get object acl failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Free the memory.
    free_acl_info(&aclinfo);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
```

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```
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
void print_acl(manager_acl_info* acl) {
    if (acl == NULL) {
        printf("acl is NULL.\n");
        return;
    }
    printf("object key :%s\n", acl->object_info.key);
    printf("object version_id :%s\n", acl->object_info.version_id);
    printf("object owner_id :%s\n", acl->owner_id);
    printf("object owner_display_name :%s\n", acl->owner_display_name);
    switch (acl->object_delivered)
    {
    case OBJECT_DELIVERED_TRUE:
        printf("object acl delivered.\n");
        break;
    default:
        printf("object acl not delivered.\n");
        break;
    }
    if (acl->acl_grant_count_return == NULL) {
        printf("acl_grant_count_return is NULL.\n");
        return;
    }
    printf("object acl_grant_count :%d\n", *acl->acl_grant_count_return);
    if (acl->acl_grants == NULL) {
        printf("acl_grants is NULL.\n");
        return;
    }
```

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```
    for (int i = 0; i < *acl->acl_grant_count_return; ++i) {
        obs_acl_grant* acl_grant = acl->acl_grants + i;
        printf("acl %d\n", i + 1);
        switch (acl_grant->bucket_delivered)
        {
        case BUCKET_DELIVERED_TRUE:
            printf("object acl delivered from bucket.\n");
            break;
        default:
            printf("object acl not delivered from bucket.\n");
            break;
        }
        switch (acl_grant->grantee_type)
        {
        case OBS_GRANTEE_TYPE_CANONICAL_USER:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_CANONICAL_USER.\n");
            break;
        case OBS_GRANTEE_TYPE_ALL_OBS_USERS:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_ALL_OBS_USERS.\n");
            break;
        case OBS_GRANTEE_TYPE_ALL_USERS:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_ALL_USERS.\n");
            break;
        case OBS_GRANTEE_TYPE_LOG_DELIVERY:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_LOG_DELIVERY.\n");
            break;
        default:
            printf("object acl grantee_type is unknown.\n");
            break;
        }
        switch (acl_grant->permission)
        {
        case OBS_PERMISSION_READ:
            printf("object acl grantee_type is OBS_PERMISSION_READ.\n");
            break;
        case OBS_PERMISSION_WRITE:
            printf("object acl grantee_type is OBS_PERMISSION_WRITE.\n");
            break;
        case OBS_PERMISSION_READ_ACP:
            printf("object acl grantee_type is OBS_PERMISSION_READ_ACP.\n");
            break;
        case OBS_PERMISSION_WRITE_ACP:
            printf("object acl grantee_type is OBS_PERMISSION_WRITE_ACP.\n");
            break;
        case OBS_PERMISSION_FULL_CONTROL:
            printf("object acl grantee_type is OBS_PERMISSION_FULL_CONTROL.\n");
            break;
        default:
            printf("object acl grantee_type is unknown.\n");
            break;
        }
        printf("acl_grant->grantee.canonical_user.display_name: %s\n", acl_grant-
>grantee.canonical_user.display_name);
        printf("acl_grant->grantee.canonical_user.id: %s\n", acl_grant->grantee.canonical_user.id);
    }
}
manager_acl_info* malloc_acl_info()
{
    manager_acl_info *aclinfo = (manager_acl_info*)malloc(sizeof(manager_acl_info));
    memset(aclinfo, 0, sizeof(manager_acl_info));
    size_t acl_grants_size = OBS_MAX_ACL_GRANT_COUNT * sizeof(obs_acl_grant);
    aclinfo->acl_grants = (obs_acl_grant*)malloc(acl_grants_size);
    memset(aclinfo->acl_grants, 0, acl_grants_size);
    aclinfo->acl_grant_count_return = (int*)malloc(sizeof(int));
    *(aclinfo->acl_grant_count_return) = 0;
    size_t owner_id_size = (OBS_MAX_GRANTEE_USER_ID_SIZE + 1) * sizeof(char);
    size_t owner_display_name_size = (OBS_MAX_GRANTEE_USER_ID_SIZE + 1) * sizeof(char);
    aclinfo->owner_id = (char *)malloc(owner_id_size);
    memset(aclinfo->owner_id, 0, owner_id_size);
```

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```
    aclinfo->owner_display_name = (char *)malloc(owner_display_name_size);
    memset(aclinfo->owner_display_name, 0, owner_display_name_size);
    return aclinfo;
}
void free_acl_info(manager_acl_info **acl)
{
    manager_acl_info *aclinfo = *acl;
    free(aclinfo->acl_grants);
    free(aclinfo->owner_display_name);
    free(aclinfo->owner_id);
    free(aclinfo->acl_grant_count_return);
    free(aclinfo);
}
```

Helpful Links

- **Obtaining Object ACL Configuration**
- **(GitHub) Sample Code**
- **OBS Error Codes**

8.7 Listing Objects in a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API lists some or all of the objects in a bucket. You can use parameters such as the prefix, number of returned objects, and start position to list objects that meet specified criteria. Returned objects are listed in alphabetical order by object name.

Restrictions

- A maximum of 1,000 objects can be listed for each API call.
- To list objects in a bucket, you must be the bucket owner or have the required permission (**obs:bucket:ListBucket** in IAM and **ListBucket** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void list_bucket_objects(const obs_options *options, const char *prefix, const char *marker,
    const char *delimiter, int maxkeys, obs_list_objects_handler *handler, void *callback_data);
```

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Request Parameters

Table 8-145 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
prefix	char *	No	**Explanation:** Name prefix that the objects to be listed must contain **Restrictions**: None **Value range**: None **Default value**: None
marker	char *	No	**Explanation:** Object name to start with when listing objects. All objects are listed in the lexicographical order. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delimiter	char *	No	**Explanation:** The character used to group object names. If the object name contains the value specified by the **delimiter** parameter, the string from the first character to the first delimiter in the object name (excluding the prefix if **prefix** is specified) is grouped into one **commonPrefix** to be returned. For a parallel file system, if this parameter is not specified, all the content in the directory is recursively listed by default, and subdirectories are also listed. In big data scenarios, file systems usually have multiple directory levels and each directory level has a large number of objects. In such case, you are advised to configure **[delimiter="/"]** to list the content in the current directory but exclude the content in subdirectories, thereby making the listing more efficient. **Restrictions**: None **Value range**: None **Default value**: None
maxkeys	int	Yes	**Explanation:** Maximum number of objects that can be listed. **Restrictions**: If the specified value is greater than **1000**, **1000** is used by default. **Value range**: An integer from **1** to **1000** **Default value**: 1000

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_list_objects_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-146 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-147 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-148 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-149 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-150 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-151 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-152 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-153 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-154 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-155 obs_list_objects_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
list_Objects_callback	**obs_list_objects_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None

Table 8-156 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 8-157 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-158 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-159 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-160 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-161 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-162 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 8-163 obs_list_objects_callback

Parameter	Type	Mandatory (Yes/No)	Description
is_truncated	int	Yes	**Explanation:** Whether the result is truncated. **Restrictions**: None **Value range**: • 0 (indicating that all results have been returned) • 1 (indicating that not all results have been returned) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
next_marker	const char *	Yes	**Explanation:** Where in the bucket the next listing begins. This parameter is returned if some listing results were not returned. You can set **key_marker** of the next request to the returned value to list the remaining results. **Restrictions**: This parameter is only available for listing objects with multiple versions. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
contents_count	const char *	Yes	**Explanation:** Start position for the next request for listing objects. It must be used together with **next_key_marker**. This parameter is returned if some listing results were not returned. You can set **version_id_marker** of the next request to the returned value to list the remaining results. **Restrictions**: This parameter is only available for listing objects with multiple versions. **Value range**: The value must contain 32 characters. **Default value**: None
contents	const **obs_list_objects_content** *	Yes	**Explanation:** Information about the listed objects. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
common_prefixes_count	int	Yes	**Explanation:** Number of common prefixes. **Restrictions**: None **Value range**: None **Default value**: None
common_prefixes	const char **	Yes	**Explanation:** List of object name prefixes grouped according to the **delimiter** parameter (if specified) **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-164 obs_list_objects_content

Parameter	Type	Mandatory (Yes/No)	Description
key	const char *	No	**Explanation:** Object name. An object is uniquely identified by an object name in a bucket. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
last_modified	int64_t	No	**Explanation:** Time when the object was last modified, in UTC. **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag value is a hash of the object. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag after MD5 encryption. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
size	uint64_t	No	**Explanation:** Object size in bytes. **Restrictions**: None **Value range**: None **Default value**: None
owner_id	const char *	No	**Explanation:** Domain ID (account ID) of the object owner. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: None **Value range**: None **Default value**: None
type	const char *	No	**Explanation:** Object type. This parameter is returned when the object type is not **Normal**. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Listing Objects

This example calls the **list_bucket_objects** function to list objects in a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void listobjects_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct list_object_callback_data
{
    int is_truncated;
    char next_marker[1024];
    int keyCount;
    int allDetails;
    obs_status ret_status;
} list_object_callback_data;
obs_status list_objects_callback(int is_truncated, const char *next_marker,
    int contents_count,
    const obs_list_objects_content *contents,
    int common_prefixes_count,
    const char **common_prefixes,
    void *callback_data);
int main()
{
    // The following code shows how to use the list_bucket_objects function to list objects in a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
```

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```
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the response callback function.
    obs_list_objects_handler list_bucket_objects_handler =
    {
        { &response_properties_callback, &listobjects_complete_callback },
        &list_objects_callback
    };
    // Customize callback data.
    list_object_callback_data data;
    memset(&data, 0, sizeof(list_object_callback_data));
    data.allDetails = 1;
    const char* prefix = NULL;
    const char* marker = NULL;
    const char* delimiter = "/";
    int maxkeys = 1000;
    // List objects.
    list_bucket_objects(&options, prefix, marker, delimiter, maxkeys, &list_bucket_objects_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("list bucket objects successfully. \n");
    }
    else
    {
        printf("list bucket objects failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
```

```
        if (properties-> field) {                                   \
            printf("%s: %s\n", name, properties->field);          \
        }                                                           \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void listobjects_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    if (callback_data)
```

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```
    {
        list_object_callback_data *data = (list_object_callback_data *)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
static void printListBucketHeader(int allDetails)
{
    printf("%-50s  %-20s  %-5s",
        "   Key",
        "   Last Modified", "Size");
    if (allDetails) {
        printf("  %-34s  %-64s  %-12s           %-12s",
            "    ETag",
            "    Owner ID",
            "Display Name",
            "StorageClass");
    }
    printf("\n");
    printf("--------------------------------------------------  "
        "--------------------  -----");
    if (allDetails) {
        printf("  --------------------------------  "
            "----------------------------------------------------"
            "---------------  ------------           ------------");
    }
    printf("\n");
}
obs_status list_objects_callback(int is_truncated, const char *next_marker,
    int contents_count,
    const obs_list_objects_content *contents,
    int common_prefixes_count,
    const char **common_prefixes,
    void *callback_data)
{
    list_object_callback_data *data = (list_object_callback_data *)callback_data;
    data->is_truncated = is_truncated;
    if ((!next_marker || !next_marker[0]) && contents_count) {
        next_marker = contents[contents_count - 1].key;
    }
    if (next_marker) {
        snprintf(data->next_marker, sizeof(data->next_marker), "%s",
            next_marker);
    }
    else {
        data->next_marker[0] = 0;
    }
    if (contents_count && !data->keyCount) {
        printListBucketHeader(data->allDetails);
    }
    int i;
    for (i = 0; i < contents_count; i++) {
        const obs_list_objects_content *content = &(contents[i]);
        char timebuf[256] = { 0 };
        time_t t = (time_t)content->last_modified;
        strftime(timebuf, sizeof(timebuf), "%Y-%m-%dT%H:%M:%SZ",
            gmtime(&t));
        char sizebuf[16] = { 0 };
        if (content->size < 100000) {
            sprintf_s(sizebuf, sizeof(sizebuf), "%5llu", (unsigned long long) content->size);
        }
        else if (content->size < (1024 * 1024)) {
            sprintf_s(sizebuf, sizeof(sizebuf), "%4lluK",
                ((unsigned long long) content->size) / 1024ULL);
        }
        else if (content->size < (10 * 1024 * 1024)) {
```

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```
            float f = content->size;
            f /= (1024 * 1024);
            sprintf_s(sizebuf, sizeof(sizebuf), "%1.2fM", f);
        }
        else if (content->size < (1024 * 1024 * 1024)) {
            sprintf_s(sizebuf, sizeof(sizebuf), "%4lluM",
                ((unsigned long long) content->size) /
                (1024ULL * 1024ULL));
        }
        else {
            float f = (content->size / 1024);
            f /= (1024 * 1024);
            sprintf_s(sizebuf, sizeof(sizebuf), "%1.2fG", f);
        }
        printf("%-50s  %s  %s", content->key, timebuf, sizebuf);
        if (data->allDetails) {
            printf("  %-36s  %-64s  %-20s  %-16s  %-16s",
                content->etag,
                content->owner_id ? content->owner_id : "",
                content->owner_display_name ? content->owner_display_name : "",
                content->storage_class ? content->storage_class : "",
                content->type ? content->type : ""
            );
        }
        printf("\n");
    }
    data->keyCount += contents_count;
    for (i = 0; i < common_prefixes_count; i++) {
        printf("\nCommon Prefix: %s\n", common_prefixes[i]);
    }
    printf("contents_count:%d\n", contents_count);
    return OBS_STATUS_OK;
}
```

Helpful Links

- **Listing Objects in a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

8.8 Deleting an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API deletes an object in the specified bucket to save space and costs.

Restrictions

- To delete an object, you must be the bucket owner or have the required permission (**obs:object:DeleteObject** in IAM or **DeleteObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.

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- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- If versioning is not enabled for a bucket, deleted objects cannot be restored.

Method

```
void delete_object(const obs_options *options, obs_object_info *object_info,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 8-165 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-166 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure** *	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-167 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-168 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-169 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-170 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-171 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-172 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-173 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(*temp_auth_callback)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-174 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-175 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-176 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-177 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-178 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-179 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-180 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-181 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 8-182 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Deleting an Object

This example calls **delete_object** to delete a single object.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to use delete_object to delete a single object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
```

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```
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Information about the object to be deleted.
    obs_object_info object_info;
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test_delete";
    object_info.version_id = NULL;
    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Delete the object.
    delete_object(&options, &object_info, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("delete object successfully. \n");
    }
    else
    {
        printf("delete object failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
```

```
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

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Helpful Links

- Deleting an Object
- (GitHub) Sample Code
- OBS Error Codes

8.9 Batch Deleting Objects (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API deletes objects in a batch from a specific bucket. Deleted objects cannot be restored.

In a batch deletion, OBS concurrently deletes the specified objects and returns the deletion result of each object.

Restrictions

- To delete objects in a batch, you must be the bucket owner or have the required permission (**obs:object:DeleteObject** in IAM or **DeleteObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- If versioning is not enabled for a bucket, deleted objects cannot be restored.
- A maximum of 1,000 objects can be deleted at a time. If you send a request for deleting more than 1,000 objects, OBS returns an error message.
- After concurrent tasks are assigned, if an internal error occurs during cyclic deletion of multiple objects, an object may be deleted in the index data but still exist in the metadata.

Method

```
void batch_delete_objects(const obs_options *options, obs_object_info *object_info,
    obs_delete_object_info *delobj,
    obs_put_properties *put_properties,
    obs_delete_object_handler *handler,
    void *callback_data);
```

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Request Parameters

Table 8-183 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
delobj	**obs_delete_object_info***	Yes	**Explanation:** Specifies the number of objects to be deleted and the quiet mode. **Restrictions**: None
put_properties	**obs_put_properties***	No	**Explanation:** Sets the verification properties of the object to be deleted. **Restrictions**: None
handler	**obs_delete_object_handler***	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-184 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-185 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-186 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-187 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-188 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-189 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-190 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-191 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-192 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-193 obs_delete_object_info

Parameter	Type	Mandatory (Yes/No)	Description
keys_number	unsigned int	Yes	**Explanation:** Number of deleted object names. **Restrictions**: None **Value range**: None **Default value**: None
quiet	int	No	**Explanation:** Specifies whether to use the quiet mode. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-194 obs_delete_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delete_object_data_callback	obs_delete_object_data_callback *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-195 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 8-196 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-197 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-198 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-199 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-200 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-201 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 8-202 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-203 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	**obs_name_value***	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	**metadata_action_indicator**	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see **metadata_action_indicator**.
server_callback	**obs_upload_file_server_callback**	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 8-204 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 8-205 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 8-206 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 8-207 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 8-208 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-209 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 8-210 obs_delete_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
contents_count	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
contents	**obs_delete_objects** *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-211 obs_delete_objects

Parameter	Type	Mandatory (Yes/No)	Description
key	constchar*	Yes	**Explanation:** Each object name in the deletion result. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
code	constchar*	No	**Explanation:** Error code of a deletion failure. **Restrictions**: None **Value range**: None **Default value**: None
message	constchar*	No	**Explanation:** Error message of a deletion failure. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delete_marker	constchar*	No	**Explanation:** OBS returns **true** for this parameter in the response when a delete marker is created or deleted for a versioning-enabled bucket. **Restrictions**: None **Value range**: None **Default value**: None
delete_marker_version_id	constchar*	No	**Explanation:** Version ID of a delete marker to create or delete. OBS returns this element in the response when a delete marker is created or deleted for a versioning-enabled bucket. This element will be returned in either of the following cases: ● You send a delete request specifying an object's name without providing a version ID. In this case, OBS creates a delete marker and returns its version ID in the response. ● You send a delete request specifying both an object's name and its version ID, but this version ID points to a delete marker. In this case, OBS deletes the delete marker and returns its version ID in the response. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Batch Deleting Objects

This example calls **batch_delete_objects** to delete multiple objects.

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```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
obs_status delete_objects_data_callback(int contentsCount,
    obs_delete_objects *delobjs,
    void *callbackData);
int main()
{
    // The following code shows how to use batch_delete_objects to delete multiple objects:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Information about the objects to be deleted in a batch.
    obs_object_info objectinfo[100];
    objectinfo[0].key = "example_get_file_test_delete1";
    objectinfo[0].version_id = NULL;
    objectinfo[1].key = "example_get_file_test_delete2";
    objectinfo[1].version_id = "versionid2";
    obs_delete_object_info delobj;
    memset(&delobj, 0, sizeof(obs_delete_object_info));
    delobj.keys_number = 2;
    // Set the response callback function.
    obs_delete_object_handler handler =
    {
        {&response_properties_callback, &response_complete_callback},
        &delete_objects_data_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Delete the objects in a batch.
    batch_delete_objects(&options, objectinfo, &delobj, 0, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("test batch_delete_objects successfully. \n");
    }
    else
    {
        printf("test batch_delete_objects failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
obs_status delete_objects_data_callback(int contentsCount,
    obs_delete_objects *delobjs,
    void *callbackData)
{
    int i;
```

```
    for (i = 0; i < contentsCount; i++) {
        const obs_delete_objects*content = &(delobjs[i]);
        printf("delete object result:\nobject key:%s\nerror code:%s\nerror message:%s\ndelete marker:%s
\ndelete marker version_id:%s\n",
                content->key, content->code, content->message, content->delete_marker, content-
>delete_marker_version_id);
    }
    return OBS_STATUS_OK;
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
```

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```
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

Helpful Links

- **Deleting Objects**
- **(GitHub) Sample Code**
- **OBS Error Codes**

8.10 Copying an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API copies an object stored in a specified bucket to another path by creating a copy of the object. You can copy an object of up to 5 GB in a single operation.

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Restrictions

- To copy an object, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- This API requires carrying the information about the source bucket and object using headers. A message body cannot be carried.
- The destination object size ranges from 0 to 5 GB. If the source object size exceeds 5 GB, you must use a multipart copying API by referring to **Copying a Part (SDK for C)**.

Method

```
void copy_object(const obs_options *options, char *key, const char *version_id,
    obs_copy_destination_object_info *object_info,
        unsigned int is_copy, obs_put_properties *put_properties,
    server_side_encryption_params *encryption_params,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 8-212 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. **Restrictions**: None **Value range**: None **Default value**: None
object_info	**obs_copy_destination_object_info** *	Yes	**Explanation:** Information about the object to be copied. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
is_copy	unsigned int	Yes	**Explanation:** Indicates whether the metadata of the destination object is copied from the source object or replaced with the metadata contained in the request. **Restrictions**: None **Value range**: None **Default value**: None
put_properties	**obs_put_properties***	No	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Server-side encryption configuration **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-213 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-214 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-215 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-216 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-217 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-218 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-219 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-220 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-221 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-222 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 8-223 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 8-224 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 8-225 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-226 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-227 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-228 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-229 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-230 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 8-231 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 8-232 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 8-233 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (downloading from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** If the object has not been modified after the specified time, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 8-234 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 8-235 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 8-236 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-237 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 8-238 obs_copy_destination_object_info

Parameter	Type	Mandatory (Yes/No)	Description
destination_bucket	constchar*	Yes	**Explanation:** Name of the destination bucket for replication. **Restrictions**: None **Value range**: None **Default value**: None
destination_key	constchar*	Yes	**Explanation:** Name of the destination object. **Restrictions**: None **Value range**: None **Default value**: None
version_id	constchar*	No	**Explanation:** Version ID of the destination object. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
last_modified_return	int64_t *	Yes	**Explanation:** Time when the object was last modified, in UTC. **Restrictions**: None **Value range**: None **Default value**: None
etag_return_size	int	Yes	**Explanation:** Length of the returned ETag **Restrictions**: None **Value range**: None **Default value**: None
etag_return	char*	Yes	**Explanation:** 128-bit MD5 digest of the Base64 code of a new object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

Code Examples: Simple Copying

This example copies an object using **copy_object**.

```
#include "eSDKOBS.h"
#include <stdio.h>
```

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```
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to copy an object using copy_object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    char eTag[OBS_COMMON_LEN_256] = { 0 };
    int64_t lastModified;
    // Specify the destination object information.
    obs_copy_destination_object_info objectinfo = { 0 };
    objectinfo.destination_bucket = "example-dest-bucket-name";
    objectinfo.destination_key = "example_destination_key";
    objectinfo.etag_return = eTag;
    objectinfo.etag_return_size = sizeof(eTag);
    objectinfo.last_modified_return = &lastModified;
    // Set the response callback function.
    obs_response_handler responseHandler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    char* source_object_key = "example_source_object_key";
    char* source_object_version_id = NULL;
    // Copy an object.
    copy_object(&options, source_object_key, source_object_version_id, &objectinfo, 1, NULL, NULL,
&responseHandler, &ret_status);
    if (OBS_STATUS_OK == ret_status && eTag[0] != '\0') {
        printf("test_copy_object successfully. \n");
    }
    else
    {
        printf("test_copy_object failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
```

```
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
```

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```
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

Code Examples: Specifying Copying Conditions

NOTE

- If the object copy request includes **if_not_modified_since**, **if_match_etag**, **if_modified_since**, or **if_not_match_etag**, and the specified condition is not met, the copy will fail and an exception will be thrown with HTTP status code **412 precondition failed** returned.
- **if_modified_since** and **if_not_match_etag** can be used together. So do **if_not_modified_since** and **if_match_etag**.

This example calls the **copy_object** function to perform conditional copy.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to use the copy_object function to perform conditional copy:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
```

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```
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    char eTag[OBS_COMMON_LEN_256] = { 0 };
    int64_t lastModified;
    // Specify the destination object information.
    obs_copy_destination_object_info objectinfo = { 0 };
    objectinfo.destination_bucket = "example-dest-bucket-name";
    objectinfo.destination_key = "example_destination_key";
    objectinfo.etag_return = eTag;
    objectinfo.etag_return_size = sizeof(eTag);
    objectinfo.last_modified_return = &lastModified;
    //Specify conditions.
    obs_put_properties putProperties = { 0 };
    init_put_properties(&putProperties);
    obs_get_conditions get_conditions = { 0 };
    init_get_properties(&get_conditions);
    putProperties.get_conditions = &get_conditions;
    putProperties.get_conditions->if_match_etag = "2ea225dbff5b5b1d7bd6bd3b740681cd";
    putProperties.get_conditions->if_modified_since = 0;
    putProperties.get_conditions->if_not_match_etag = "34a7ef8cc629583f3cdd882791f31350";
    putProperties.get_conditions->if_not_modified_since = INT_MAX;
    // Set the response callback function.
    obs_response_handler responseHandler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    char* source_object_key = "example_source_object_key";
    char* source_object_version_id = NULL;
    // Copy an object.
    copy_object(&options, source_object_key, source_object_version_id, &objectinfo, 1, &putProperties, NULL,
&responseHandler, &ret_status);
    if (OBS_STATUS_OK == ret_status && eTag[0] != '\0') {
        printf("test_copy_object successfully. \n");
    }
    else
    {
        printf("test_copy_object failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);         \
```

```
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
```

```
    obs_status *ret_status = (obs_status *)callback_data;
    *ret_status = status;
  }
  else {
    printf("Callback_data is NULL");
  }
  print_error_details(error);
}
```

Code Examples: Rewriting an Object ACL

This example rewrites the ACL of the destination object when calling the **copy_object** function to copy an object.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
  const obs_error_details *error,
  void *callback_data);
int main()
{
  // The following code shows how to use the copy_object function to rewrite the ACL of the destination object:
  // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
  obs_initialize(OBS_INIT_ALL);
  obs_options options;
  // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
  init_obs_options(&options);
  // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
  options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
  // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
  // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
  options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
  options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
  // Specify the bucket name, for example, example-bucket-name.
  char * bucketName = "example-bucket-name";
  options.bucket_options.bucket_name = bucketName;
  char eTag[OBS_COMMON_LEN_256] = { 0 };
  int64_t lastModified;
  // Specify the destination object information.
  obs_copy_destination_object_info objectinfo = { 0 };
  objectinfo.destination_bucket = "example-dest-bucket-name";
  objectinfo.destination_key = "example_destination_key";
  objectinfo.etag_return = eTag;
  objectinfo.etag_return_size = sizeof(eTag);
  objectinfo.last_modified_return = &lastModified;
  //Rewrite the ACL of the destination object.
  obs_put_properties putProperties = { 0 };
  init_put_properties(&putProperties);
  putProperties.canned_acl = OBS_CANNED_ACL_PUBLIC_READ;
  // Set the response callback function.
  obs_response_handler responseHandler =
  {
    &response_properties_callback,
    &response_complete_callback
  };
  obs_status ret_status = OBS_STATUS_BUTT;
  char* source_object_key = "example_source_object_key";
```

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```
    char* source_object_version_id = NULL;
    // Copy an object.
    copy_object(&options, source_object_key, source_object_version_id, &objectinfo, 1, &putProperties, NULL,
&responseHandler, &ret_status);
    if (OBS_STATUS_OK == ret_status && eTag[0] != '\0') {
        printf("test_copy_object successfully. \n");
    }
    else
    {
        printf("test_copy_object failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
```

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```
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

Helpful Links

- **Copying Objects**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Object Copy**

8.11 Renaming an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

This API renames an object in the parallel file system (PFS).

Restrictions

- To rename an object, you must be the PFS owner or have the required permission (**obs:bucket:PutObject** in IAM or **PutObject** in a policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- This API is currently available only for PFSs. Object buckets do not support this API.
- If the object to be renamed does not exist, an error is reported (HTTP status code 404).

Method

```
void rename_object(const obs_options *options, char *key, char *new_object_name,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 8-239 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
new_object_name	char *	Yes	**Explanation:** New object name. **Restrictions**: None **Value range**: None **Default value**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-240 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-241 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-242 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-243 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-244 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-245 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-246 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-247 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-248 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-249 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-250 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-251 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-252 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-253 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-254 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-255 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Renaming an Object

This example calls the **rename_object** function to rename an object. (applicable to parallel file systems but not to object buckets)

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to use the rename_object function to rename an object (applicable to parallel file systems but not to object buckets):
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
```

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```
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char * bucketName = "example-posix-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Object name
    char *key = "example_rename_key_test";
    // New object name
    char *new_key_name = "example_rename_key_test_new";
    // Set the response callback function.
    obs_response_handler response_handler =
    {
        // Object properties can be obtained from response_properties_callback.
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Rename the object.
    rename_object(&options, key, new_key_name, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("rename_object successfully. \n");
    }
    else
    {
        printf("rename_object failed.\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
```

```
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

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8.12 Truncating an Object (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can call **truncate_object** to truncate an object. This API truncates an object in the parallel file system.

Restrictions

- If the object to be truncated does not exist, an error is reported (HTTP status code 404).
- This API applies only to parallel file systems and does not support object buckets.

Method

```
void truncate_object(const obs_options *options, char *key, uint64_t object_length,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 8-256 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
object_length	uint64_t	Yes	**Explanation:** Length to be truncated to **Restrictions**: None **Value range**: None **Default value**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-257 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure** *	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 8-258 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 8-259 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 8-260 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-261 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 8-262 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 8-263 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 8-264 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-265 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-266 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 8-267 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-268 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 8-269 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-270 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-271 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 8-272 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Truncating an Object

This example calls the **truncate_object** function to truncate an object. (applicable to parallel file systems but not to object buckets)

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to use the truncate_object function to truncate an object (applicable
to parallel file systems but not to object buckets):
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char * bucketName = "example-posix-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Object name
    char *key = "example_truncate_key_test";
    uint64_t object_length = 1024;
    // Set the response callback function.
    obs_response_handler response_handler =
    {
        // Object properties can be obtained from response_properties_callback.
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Truncate the object.
    truncate_object(&options, key, object_length, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("truncate_object successfully. \n");
    }
    else
    {
        printf("truncate_object failed.\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
```

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```
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
```

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```
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

9 Multipart Upload APIs (SDK for C)

9.1 Multipart Upload APIs (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

You can upload a large file using multipart upload. Multipart upload is applicable to many scenarios. Below are some examples.

- A file to be uploaded is larger than 100 MB.
- The network connection to the OBS server breaks often.
- The size of a file to be uploaded is unknown.

A multipart upload consists of the following steps:

1. **Initiating a Multipart Upload (SDK for C)**
2. **Uploading a Part (SDK for C)**
3. **Assembling Parts (SDK for C)** or **Aborting a Multipart Upload (SDK for C)**

Multipart upload is mainly used for large file upload or when the network connection is poor. This example uploads a large file in parts concurrently:

```
static void test_concurrent_upload_part(char *filename, char *key, uint64_t uploadSliceSize)
{
    obs_status ret_status = OBS_STATUS_BUTT;
    // Create and initialize option.
    obs_options option;
    init_obs_options(&option);
    option.bucket_options.host_name = "<your-endpoint>";
    option.bucket_options.bucket_name = "<Your bucketname>";

    //Read the AK/SK from environment variables.
    option.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    option.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char *concurrent_upload_id;
    uint64_t uploadSize = uploadSliceSize;
    uint64_t filesize =0;
```

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```
// Initialize the put_properties structure.
obs_put_properties put_properties;
init_put_properties(&put_properties);
// Large file information: file pointer, file size, number of parts determined by part size
test_upload_file_callback_data data;
memset(&data, 0, sizeof(test_upload_file_callback_data));
filesize = get_file_info(filename,&data);
data.noStatus = 1;
data.part_size = uploadSize;
data.part_num = (filesize % uploadSize == 0) ? (filesize / uploadSize) : (filesize / uploadSize +1);
// Initialize the callback function of the uploading part.
obs_response_handler Handler =
{
    &response_properties_callback, &response_complete_callback
};
// Callback function for assembling parts
obs_complete_multi_part_upload_handler complete_multi_handler =
{
   {&response_properties_callback,
    &response_complete_callback},
   &CompleteMultipartUploadCallback
};
//Initiating the multipart upload returns uploadId: uploadIdReturn.
char uploadIdReturn[256] = {0};
int upload_id_return_size = 255;
initiate_multi_part_upload(&option,key,upload_id_return_size,uploadIdReturn, &putProperties,
       0,&Handler, &ret_status);
if (OBS_STATUS_OK == ret_status) {
   printf("test init upload part return uploadIdReturn(%s). \n", uploadIdReturn);
   strcpy(concurrent_upload_id,uploadIdReturn);
}
else
{
   printf("test init upload part failed(%s).\n", obs_get_status_name(ret_status));
}
// Concurrent upload
test_concurrent_upload_file_callback_data *concurrent_upload_file;
concurrent_upload_file =(test_concurrent_upload_file_callback_data *)malloc(
            sizeof(test_concurrent_upload_file_callback_data)*(data.part_num+1));
if(concurrent_upload_file == NULL)
{
    printf("malloc test_concurrent_upload_file_callback_data failed!!!");
    return ;
}
test_concurrent_upload_file_callback_data *concurrent_upload_file_complete =
                    concurrent_upload_file;
start_upload_threads(data, concurrent_upload_id,filesize, key, option, concurrent_upload_file_complete);
// Assemble parts.
obs_complete_upload_Info *upload_Info = (obs_complete_upload_Info *)malloc(
         sizeof(obs_complete_upload_Info)*data.part_num);
for(i=0; i<data.part_num; i++)
{
   upload_Info[i].part_number = concurrent_upload_file_complete[i].part_num;
   upload_Info[i].etag = concurrent_upload_file_complete[i].etag;
}
complete_multi_part_upload(&option, key, uploadIdReturn,
data.part_num,upload_Info,&putProperties,&complete_multi_handler,&ret_status);
if (ret_status == OBS_STATUS_OK) {
   printf("test complete upload successfully. \n");
}
else
{
   printf("test complete upload failed(%s).\n", obs_get_status_name(ret_status));
}
if(concurrent_upload_file)
{
   free(concurrent_upload_file);
   concurrent_upload_file = NULL;
}
```

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```
    if(upload_Info)
    {
        free(upload_Info);
        upload_Info = NULL;
    }
}
```

NOTE

When uploading a large file in parts, you need to use the **Offset** and **PartSize** parameters to specify the start and end positions of each part in the file.

CAUTION

If the concurrency value is too great, timeout may occur due to network instability. In such case, you need to reduce that value.

9.2 Initiating a Multipart Upload (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API initiates a multipart upload and returns a globally unique upload ID. You can use this upload ID in your subsequent requests for uploading, assembling, and listing parts. Initiating multipart upload tasks do not affect existing objects with the same names as the involved objects in those tasks. There can be more than one multipart upload for the same object. Each multipart upload initiation request can contain additional headers such as **contentType**, **contentEncoding**, and the headers for ACL and custom metadata. These headers are recorded in the multipart upload metadata.

You can use this API to initiate a multipart upload in a specified bucket.

Restrictions

- To initiate a multipart upload, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- After initiating a multipart upload and uploading one or more parts, you must **assemble the parts** or **abort the multipart upload** to stop being charged for the storage of the uploaded parts.

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Method

```
void initiate_multi_part_upload(const obs_options *options, char *key,int upload_id_return_size,
      char *upload_id_return, obs_put_properties *put_properties,
      server_side_encryption_params *encryption_params,
      obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 9-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options** *	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
upload_id_return_size	int	Yes	**Explanation:** Size of the cache for the multipart upload ID. **Restrictions**: None **Value range**: None **Default value**: None
upload_id_return	char *	Yes	**Explanation:** Cache of the multipart upload ID. **Restrictions**: None **Value range**: None **Default value**: None
put_properties	**obs_put_properties***	No	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 9-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** For details, see **Creating Access Keys**. **Restrictions**: None **Value range**: None **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_type	obs_bucket_type	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	obs_bucket_list_type	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

Table 9-4 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

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Table 9-5 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-6 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-7 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 9-8 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-11 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None
md5	char *	Yes	**Explanation:** Base64-encoded MD5 value of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864 Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 9-12 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 9-13 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (downloading from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** If the object has not been modified after the specified time, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Specifies a preset ETag value. If the ETag value of the object to be downloaded or copied is different from the value of this parameter, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 9-14 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 9-15 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 9-16 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	**image_process_mode_type**	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-17 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 9-18 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 9-19 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

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Table 9-20 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 9-21 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-22 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-23 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirect-Location**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-24 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-25 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-26 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Initiating a Multipart Upload

This example initiates a multipart upload using **initiate_multi_part_upload**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to initiate a multipart upload using initiate_multi_part_upload:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Define the cache and size of the multipart upload ID.
    char upload_id[OBS_COMMON_LEN_256] = { 0 };
    int upload_id_size = OBS_COMMON_LEN_256;
    // Set the response callback function.
    obs_response_handler handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    // Name of the object to be uploaded in multiparts
    char *key = "example_multi_part_upload_object_key";
    // Initiate a multipart upload. Set upload_id below to the value of upload_id_return listed in the
parameter table above.
    obs_status ret_status;
    initiate_multi_part_upload(&options, key, upload_id_size, upload_id, NULL, NULL, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("test init upload part successfully. uploadId= %s\n", upload_id);
    }
    else
    {
        printf("test init upload part failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
```

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```
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
```

```
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Initiating a Multipart Upload**
- **(GitHub) Sample Code**
- **OBS Error Codes**

9.3 Uploading a Part (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

After a multipart upload is initiated, this API uploads a part to a specified bucket. In the upload request, the multipart upload ID must be included. The last part uploaded ranges from 0 to 5 GB, while the other parts range from 100 KB to 5 GB. Parts are numbered from **1** to **10000**.

When uploading a part, you must specify its upload ID and part number. You can select any part number between **1** and **10000**. A part number uniquely identifies a part and its location in the object you are uploading. If the number of an uploaded part is used to upload a new part, the uploaded part will be overwritten. Whenever you upload a part, OBS returns the ETag header in the response. For each part upload, you must record the part number and the ETag value. These values are required in subsequent requests to complete a multipart upload.

Restrictions

- To upload a part, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy).

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For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.

- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- After initiating a multipart upload and uploading one or more parts, you must assemble the parts or abort the multipart upload to stop being charged for the storage of the uploaded parts.
- A part number uniquely identifies a part. If you upload the same numbered part, the new part overwrites the old one. If multiple users upload the same numbered part of the same object at the same time, the "last write wins" policy applies. The time of last write is defined as the creation time in the part metadata. To ensure data accuracy, the client must be locked to address concurrent uploads of the same part of the same object. No locking is needed for concurrent uploads of different parts of the same object.
- Except the part last uploaded, other parts must be larger than 100 KB. Part sizes will not be verified during upload because which one is last uploaded is not identified until parts are combined.
- OBS will return ETags (MD5 values) of the received parts to users.
- To ensure data integrity, set the value of MD5 and add the MD5 value to the **Content-MD5** request header. The OBS server will compare the MD5 value contained by each part and that calculated by SDK to verify the data integrity.
- Part numbers range from 1 to 10000. If a part number exceeds this range, OBS will return error **400 Bad Request**.
- The minimum part size supported by an OBS 3.0 bucket is 100 KB, and the minimum part size supported by an OBS 2.0 bucket is 5 MB. You are advised to perform multipart upload to OBS 3.0 buckets.

Method

```
void upload_part(const obs_options *options, char *key, obs_upload_part_info *upload_part_info,
    uint64_t content_length, obs_put_properties *put_properties,
    server_side_encryption_params *encryption_params,
    obs_upload_handler *handler, void *callback_data);
```

Request Parameters

Table 9-27 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
upload_part_info	**obs_upload_part_info** *	Yes	**Explanation:** Information about the part upload **Restrictions**: None
content_length	uint64_t	Yes	**Explanation:** Length of the object content **Restrictions**: None **Value range**: None **Default value**: If this parameter is not specified, the SDK automatically calculates the size of the object.
put_properties	**obs_put_properties***	No	**Explanation:** Properties of the uploaded object **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
encryption_params	server_side_encryption_params *	No	**Explanation:** Encryption setting of the uploaded object **Restrictions**: None
handler	obs_upload_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-28 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 9-29 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 9-30 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 9-31 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-32 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-33 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 9-34 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-35 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-36 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-37 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	obs_encryption_type	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

Table 9-38 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 9-39 obs_upload_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
upload_data_callback	**obs_upload_data_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the data to be uploaded to the data upload buffer. **Restrictions**: None
progress_callback	**obs_progress_callback_internal** *	Yes	**Explanation:** Pointer to the progress callback function. **Restrictions**: None

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Table 9-40 obs_progress_callback_internal

Parameter	Type	Mandatory (Yes/No)	Description
now	uint64_t	Yes	**Explanation:** Number of bytes that have been uploaded. **Restrictions**: None **Value range**: None **Default value**: None
total	uint64_t	Yes	**Explanation:** Total number of bytes to be uploaded. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-41 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 9-42 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-43 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-44 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-45 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-46 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-47 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 9-48 obs_upload_part_info

Parameter	Type	Mandatory (Yes/No)	Description
part_number	unsigned int	Yes	**Explanation:** Number of the uploaded part. **Restrictions**: None **Value range**: An integer ranging from 1 to 10000. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
upload_id	int	Yes	**Explanation:** ID of a multipart upload task. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-49 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Base64-encoded MD5 value of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 9-50 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 9-51 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (downloading from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** If the object has not been modified after the specified time, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Specifies a preset ETag value. If the ETag value of the object to be downloaded or copied is different from the value of this parameter, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 9-52 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 9-53 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 9-54 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-55 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 9-56 obs_upload_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
buffer	char *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Code Example: Uploading a Part

This example uploads parts using **upload_part**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct test_upload_file_callback_data
{
    obs_status ret_status;
    FILE *infile;
    int part_num;
    uint64_t part_size;
    uint64_t start_byte;
} test_upload_file_callback_data;
uint64_t get_file_info(char *localfile, test_upload_file_callback_data *data);
int test_upload_file_data_callback(int buffer_size, char *buffer, void *callback_data);
int main()
{
    // The following code shows how to upload parts using upload_part:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Name of the object to be uploaded in multiparts
    char *key = "example_multi_part_upload_object_key";
    // Multipart upload ID
    char* uploadID = "00000194178F94B64016E9C3BD03E89B";
    // Define the part size as 5 MB.
    uint64_t uploadSliceSize = 5L * 1024 * 1024;
    // Name of the file to be uploaded
    char file_name[256] = "./example_local_file_to_upload.tar";
    // Define and initialize the size of the parts to be uploaded.
    uint64_t uploadSize = uploadSliceSize;
    // Define and initialize the length variable of the uploaded file.
    uint64_t fileSize = 0;
    //Initialize put_properties.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    //Callback function
    obs_upload_handler handler =
    {
        {&response_properties_callback, &response_complete_callback},
        &test_upload_file_data_callback
    };
    //Initialize the callback data.
    test_upload_file_callback_data data;
```

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```
    memset(&data, 0, sizeof(test_upload_file_callback_data));
    // Because two parts need to be uploaded, the file size must be greater than the value of
uploadSliceSize.
    fileSize = get_file_info(file_name,&data);
    if (fileSize == 0) {
        // Failure to open the file
        return -1;
    }
    data.part_size = uploadSize;
    data.part_num = (fileSize % uploadSize == 0) ? (fileSize / uploadSize) : (fileSize / uploadSize +1);
    obs_upload_part_info uploadPartInfo;
    memset(&uploadPartInfo, 0, sizeof(obs_upload_part_info));
    //Upload the first part.
    uploadPartInfo.part_number = 1;
    uploadPartInfo.upload_id = uploadID;
    data.start_byte  = 0;
    data.ret_status = OBS_STATUS_BUTT;
    upload_part(&options,key,&uploadPartInfo,uploadSize,
                                &put_properties,0,&handler,&data);
    if (data.infile != NULL) {
        fclose(data.infile);
        data.infile = NULL;
    }
    if (OBS_STATUS_OK == data.ret_status) {
        printf("test upload part 1 successfully. \n");
    }
    else
    {
        printf("test upload part 1 failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    //Upload the second part.
    uploadPartInfo.part_number = 2;
    uploadPartInfo.upload_id = uploadID;
    fileSize = get_file_info(file_name, &data);
    uploadSize = fileSize - uploadSize;
    data.part_size = uploadSize;
    data.start_byte = uploadSliceSize;
    data.ret_status = OBS_STATUS_BUTT;
    upload_part(&options,key,&uploadPartInfo,uploadSize, &put_properties,0,&handler,&data);
    if (data.infile != NULL) {
        fclose(data.infile);
        data.infile = NULL;
    }
    if (OBS_STATUS_OK == data.ret_status) {
        printf("test upload part 2 successfully. \n");
    }
    else
    {
        printf("test upload part 2 failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
```

```
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        test_upload_file_callback_data *data =
            (test_upload_file_callback_data *)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
```

```
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
int test_upload_file_data_callback(int buffer_size, char *buffer, void *callback_data)
{
    test_upload_file_callback_data *data =
        (test_upload_file_callback_data *)callback_data;
    int ret = 0;
    fseek(data->infile, data->start_byte, SEEK_SET);
    int toRead = ((data->part_size > (unsigned)buffer_size) ?
        (unsigned)buffer_size : data->part_size);
    ret = fread(buffer, 1, toRead, data->infile);
    data->start_byte += ret;
    return ret;
}
uint64_t get_file_info(char *localfile, test_upload_file_callback_data *data)
{
    data->infile = 0;
    uint64_t content_length = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    return content_length;
}
```

Helpful Links

- **Uploading a Part**
- **(GitHub) Sample Code**
- **OBS Error Codes**

9.4 Assembling Parts (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

This API assembles the uploaded parts to complete the multipart upload. Before performing this operation, you cannot download the uploaded data. When assembling parts, you need to copy the additional message header information recorded during the multipart upload initiation to the object metadata. Such information is processed in the same way the information in a regular object upload is processed. In the case of assembling parts concurrently, the Last Write Wins strategy applies, but the time of Last Write is defined as the time when a multipart upload was initiated.

As long as the multipart upload is not aborted, all uploaded parts occupy the space. However, after you assembled the specified parts, those uploaded but not assembled will be deleted to free up space.

When assembling parts, OBS arranges parts in ascending order by part number. If any object metadata is provided during the initiation of the multipart upload, OBS will associate this metadata with the object. When the multipart upload is complete, the individual parts will no longer exist. A part assembling request must contain the upload ID, part numbers, and ETag values. OBS responses include the ETag that uniquely identifies the object data. This ETag is not required to be the MD5 hash value of the object data.

Restrictions

- To assemble parts, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- After a multipart upload is complete, the uploaded parts that were not assembled will be automatically deleted and cannot be restored. Before assembling parts, use the API for listing uploaded parts to check all parts to ensure no parts were left out.

Method

```
void complete_multi_part_upload(const obs_options *options, char *key, const char *upload_id,
    unsigned int part_number,
    obs_complete_upload_Info *complete_upload_Info, obs_put_properties *put_properties,
    obs_complete_multi_part_upload_handler *handler, void *callback_data);
```

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Request Parameters

Table 9-57 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
upload_id	char *	Yes	**Explanation:** Identifies a multipart upload. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
part_number	unsigned int	Yes	**Explanation:** Number of parts (the length of the **complete_upload_Info** array) **Restrictions**: None **Value range**: None **Default value**: None
complete_upload_Info	**obs_complete_upload_Info** *	Yes	**Explanation:** Part information array **Restrictions**: None
put_properties	**obs_put_properties***	No	**Explanation:** Properties of the uploaded object **Restrictions**: None
handler	**obs_complete_multi_part_upload_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-58 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 9-59 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 9-60 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 9-61 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-62 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-63 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 9-64 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-65 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-66 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-67 obs_complete_multi_part_upload_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
complete_multipart_upload_callback	**obs_complete_multi_part_upload_callback** *	Yes	**Explanation:** Pointer to the callback function for assembling parts, which is used to obtain information about assembling parts. **Restrictions**: None

Table 9-68 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 9-69 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-70 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-71 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-72 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-73 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-74 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 9-75 obs_complete_upload_Info

Parameter	Type	Mandatory (Yes/No)	Description
part_number	unsigned int	Yes	**Explanation:** Part number. **Restrictions**: None **Value range**: An integer ranging from 1 to 10000. **Default value**: None
etag	char *	Yes	**Explanation:** ETag value of a part **Restrictions**: None **Value range**: None **Default value**: None

Table 9-76 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 9-77 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 9-78 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (downloading from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length of the file to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** If the object has not been modified after the specified time, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Specifies a preset ETag value. If the ETag value of the object to be downloaded or copied is different from the value of this parameter, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 9-79 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 9-80 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 9-81 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	**image_process_mode_type**	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.

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Parameter	Type	Mandatory (Yes/No)	Description
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-82 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 9-83 obs_complete_multi_part_upload_callback

Parameter	Type	Mandatory (Yes/No)	Description
location	const char *	Yes	**Explanation:** Path of the object the parts are assembled into. **Restrictions**: Format: /*bucketName*/*objectName* **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket	const char *	Yes	**Explanation:** Bucket where parts are assembled **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	const char *	Yes	**Explanation:** The name of the object the parts are assembled into. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
etag	const char *	Yes	**Explanation:** The ETag that uniquely identifies the object after its parts were assembled, calculated based on the ETag of each part. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: Format: /*bucketName*/*objectName* **Value range**: None **Default value**: None

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Code Examples: Assembling Parts

This example assembles parts using **complete_multi_part_upload**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status CompleteMultipartUploadCallback_Intern(const char *location,
    const char *bucket,
    const char *key,
    const char *etag,
    void *callback_data);
int main()
{
    // The following code shows how to assemble parts using complete_multi_part_upload:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;

    // Initialize the put_properties structure.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object with parts that need to be assembled
    char *key = "example_multi_part_upload_object_key";
    // Specify the part information.
    char *uploadId = "000001930065F7C64014C38C138D654B";
    obs_complete_upload_Info info[2];
    info[0].part_number = 1;
    info[0].etag = "4662995f27b37f9e3cdd42f682f29b27";
    info[1].part_number = 2;
    info[1].etag = "cd37aa94cf614fe5cded93707cbf7f88";
    unsigned int part_count = sizeof(info) / sizeof(obs_complete_upload_Info);
    // Set the response callback function.
    obs_complete_multi_part_upload_handler Handler =
    {
        {&response_properties_callback,
         &response_complete_callback},
        &CompleteMultipartUploadCallback_Intern
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Assemble the parts.
    complete_multi_part_upload(&options, key, uploadId, part_count, info, &put_properties,
        &Handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("test complete upload successfully. \n");
    }
```

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```
    else
    {
        printf("test complete upload failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                               \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
```

```
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *data =
            (obs_status *)callback_data;
        *data = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
obs_status CompleteMultipartUploadCallback_Intern(const char *location,
    const char *bucket,
    const char *key,
    const char *etag,
    void *callback_data)
{
    printf("location = %s \nbucket = %s \nkey = %s \neTag = %s \n", location, bucket, key, etag);
    return OBS_STATUS_OK;
}
```

NOTE

- In this example, the **info** structure array indicates the list of part numbers and ETags of uploaded parts.
- Part numbers can be inconsecutive.

Helpful Links

- **Completing a Multipart Upload**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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9.5 Listing Multipart Uploads (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API lists multipart uploads that have been initiated but not completed or cancelled.

For each listing request, OBS can list a maximum of 1,000 multipart upload tasks. If there are more than 1,000 tasks, you need to send more than one request to list all of them.

Restrictions

- To list multipart uploads, you must be the bucket owner or have the required permission (**obs:bucket:ListBucketMultipartUploads** in IAM or **ListBucketMultipartUploads** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- This API requires you have the **ListBucketMultipartUploads** permission.
- A bucket owner can grant others the **ListBucketMultipartUploads** permission.

Method

```
void list_multipart_uploads(const obs_options *options, const char *prefix, const char *marker,
    const char *delimiter, const char* uploadid_marker, int max_uploads,
    obs_list_multipart_uploads_handler *handler, void *callback_data);
```

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Request Parameters

Table 9-84 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
prefix	const char *	Yes	**Explanation:** Prefix that the object names in the multipart uploads to be listed must contain. Assume that you have the following objects: **logs/day1**, **logs/day2**, **logs/day3**, and **ExampleObject.jpg**. If you specify **logs/** as the prefix, the multipart uploads that contain **logs/day1**, **logs/day2**, or **logs/day3** will be returned. If this parameter is left blank and there are no other filtering criteria, all multipart uploads in the bucket will be returned. **Restrictions**: The value can contain 1 to 1,024 characters. **Value range**: None **Default value**: None
marker	const char *	Yes	**Explanation:** Object name after which the multipart upload listing begins. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delimiter	const char *	Yes	**Explanation:** Object names are grouped by this parameter, which is often used with **prefix**. If a prefix is specified, objects with the same string from the prefix to the first delimiter are grouped into one **commonPrefixes**. If no prefix is specified, objects with the same string from the first character to the first delimiter are grouped into one **commonPrefixes**. Assume that a bucket has objects **abcd**, **abcde**, and **bbcde** in it. If **delimiter** is set to **d** and **prefix** is set to **a**, objects **abcd** and **abcde** are grouped into a **commonPrefixes** with **abcd** as the prefix. If only **delimiter** is set to **d**, objects **abcd** and **abcde** are grouped into a **commonPrefixes** with **abcd** as the prefix, and **bbcde** is grouped separately into another **commonPrefixes** with **bbcd** as the prefix. **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
uploadid_marker	const char *	Yes	**Explanation:** Upload ID to start with when listing multipart uploads. **Restrictions**: This parameter must be used together with **keyMarker**, indicating multipart uploads with IDs greater than the specified **uploadIdMarker** for the specified **keyMarker** are listed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_uploads	int	Yes	**Explanation:** Maximum number of multipart uploads to list. **Restrictions**: If the specified value is greater than **1000**, **1000** is used by default. **Value range**: An integer from **1** to **1000** **Default value**: 1000
handler	**obs_list_multipart_uploads_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-85 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None

Parameter	Type	Mandatory (Yes/No)	Description
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 9-86 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 9-87 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 9-88 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-89 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-90 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 9-91 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-92 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-93 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-94 obs_list_multipart_uploads_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
list_mulpu_callback	**obs_list_multipart_uploads_callback** *	Yes	**Explanation:** Callback function pointer, which is used to copy the listed data to the custom callback data. **Restrictions**: None

Table 9-95 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 9-96 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-97 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-98 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-99 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-100 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-101 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 9-102 obs_list_multipart_uploads_callback

Parameter	Type	Mandatory (Yes/No)	Description
is_truncated	int	Yes	**Explanation:** Whether the result list is truncated in the response. **Restrictions**: None **Value range**: None **Default value**: None
next_marker	const char *	Yes	**Explanation:** If not all results are returned, this parameter is returned to specify the **marker** value of the next request. **Restrictions**: None **Value range**: None **Default value**: None
next_uploadId_marker	const char *	Yes	**Explanation:** If not all results are returned, this parameter is returned to specify the **uploadid_marker** value of the next request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
uploads_count	int	Yes	**Explanation:** Number of uploads. **Restrictions**: This parameter is only available for listing objects with multiple versions. **Restrictions**: None **Value range**: None **Default value**: None
uploads	const **obs_list_multipart_upload** *	Yes	**Explanation:** Listed information. **Restrictions**: None
common_prefixes_count	int	Yes	**Explanation:** Number of common prefixes. **Restrictions**: None **Value range**: None **Default value**: None
common_prefixes	const char **	Yes	**Explanation:** List of object name prefixes grouped according to the **delimiter** parameter (if specified) **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-103 obs_list_multipart_upload

Parameter	Type	Mandatory (Yes/No)	Description
key	const char *	No	**Explanation:** Object name An object is uniquely identified by an object name in a bucket. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

Parameter	Type	Mandatory (Yes/No)	Description
upload_id	const char *	No	**Explanation:** Multipart upload ID **Restrictions**: None **Value range**: None **Default value**: None
initiator_id	const char *	No	**Explanation:** Initiator of the multipart upload **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
owner_id	const char *	No	**Explanation:** Domain ID (account ID) of the object owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
initiated	int64_t	No	**Explanation:** Time when the multipart upload was initiated. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Listing Multipart Uploads

This example lists multipart upload tasks using **list_multipart_uploads**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
// The callback function for listing multipart upload tasks. The information about the listed multipart
upload tasks in the callback can be recorded in callback_data (custom callback data).
obs_status list_multipart_uploads_callback(int is_truncated, const char *next_marker,
    const char *next_uploadId_marker, int uploads_count,
    const obs_list_multipart_upload *uploads, int common_prefixes_count,
    const char **common_prefixes, void *callback_data);
int main()
{
    // The following code shows how to list multipart upload tasks using list_multipart_uploads:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Specify the prefix that the listed tasks must contain in their object names.
    char *prefix = "example_multi_part_upload_object_key";
    // Specify key-marker whose following tasks will be listed.
    char *marker = "";
    // Used to group the listing results.
```

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```
    char *delimiter = "/";
    // The parameter below is valid only when it is used together with key-marker. The tasks with the IDs following the upload-id-marker of the specified key-marker are returned.
    char *uploadid_marker = "";
    // Maximum number of multipart upload tasks that can be listed. The value should be from 1 to 1000. If the specified value is beyond this range, the default value 1000 is used.
    int max_uploads = 1000;
    // Set the response callback function.
    obs_list_multipart_uploads_handler handler = {
        {
            &response_properties_callback,
            &response_complete_callback
        },
        &list_multipart_uploads_callback
    };
    // List multipart upload tasks.
    obs_status ret_status;
    list_multipart_uploads(&options, prefix, marker, delimiter, NULL, NULL, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("test list_multipart_uploads successfully.\n");
    }
    else
    {
        printf("test list_multipart_uploads failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The callback function for listing multipart upload tasks. The information about the listed multipart upload tasks in the callback can be recorded in callback_data (custom callback data).
obs_status list_multipart_uploads_callback(int is_truncated, const char *next_marker,
    const char *next_uploadId_marker, int uploads_count,
    const obs_list_multipart_upload *uploads, int common_prefixes_count,
    const char **common_prefixes, void *callback_data) {
    printf("is_truncated ? %s\n", is_truncated ? "yes" : "no");
    printf("next_marker is %s\n", next_marker);
    printf("next_uploadId_marker is %s\n", next_uploadId_marker);
    for (int i = 0; i < uploads_count; ++i) {
        printf("multipart upload task %d. object key is %s\n", i, uploads[i].key);
        printf("multipart upload task %d. object upload_id is %s\n", i, uploads[i].upload_id);
        printf("multipart upload task %d. object initiator_id is %s\n", i, uploads[i].initiator_id);
        printf("multipart upload task %d. object initiator_display_name is %s\n", i, uploads[i].initiator_display_name);
        printf("multipart upload task %d. object owner_id is %s\n", i, uploads[i].owner_id);
        printf("multipart upload task %d. object owner_display_name is %s\n", i, uploads[i].owner_display_name);
        printf("multipart upload task %d. object storage_class is %s\n", i, uploads[i].storage_class);
        printf("multipart upload task %d. object initiated is %lld\n", i, uploads[i].initiated);
    }
    for (int i = 0; i < common_prefixes_count; ++i) {
        printf("common_prefixes %d is %s\n", i, common_prefixes[i]);
    }
    return OBS_STATUS_OK;
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
```

```
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
```

```
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Listing Initiated Multipart Uploads in a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**

9.6 Listing Uploaded Parts (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API lists the uploaded parts in a specified bucket. This request must contain the multipart upload ID.

You can list the uploaded parts of a specified multipart upload or of all ongoing multipart uploads. For each listing request, OBS can list a maximum of 1,000 uploaded parts. If more than 1,000 parts were uploaded for a multipart upload, you need to send more than one request to list all uploaded parts. Assembled parts will not be listed.

Restrictions

- To list uploaded parts, you must be the bucket owner or have the required permission (**obs:object:ListMultipartUploadParts** in IAM or **ListMultipartUploadParts** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void list_parts (const obs_options *options, char *key, list_part_info *listpart,
    obs_list_parts_handler *handler, void *callback_data);
```

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Request Parameters

Table 9-104 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	constchar *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
listpart	**list_part_info** *	Yes	**Explanation:** Identifies a multipart upload. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_list_parts_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-105 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 9-106 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 9-107 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 9-108 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-109 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-110 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 9-111 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-112 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-113 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-114 list_part_info

Parameter	Type	Mandatory (Yes/No)	Description
upload_id	char *	No	**Explanation:** Multipart upload ID **Restrictions**: None **Value range**: None **Default value**: None
max_parts	unsigned int	No	**Explanation:** Maximum number of parts that can be listed **Restrictions**: None **Value range**: None **Default value**: None
part_number_marker	unsigned int	No	**Explanation:** Part after which the part listing begins. OBS lists only parts with greater numbers than that specified by this parameter. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Table 9-115 obs_list_parts_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
list_parts_callback_ex	**obs_list_parts_callback_ex** *	Yes	**Explanation:** Callback for listing parts, which is used to obtain the information about the listed parts. **Restrictions**: None

Table 9-116 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 9-117 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-118 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.

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Parameter	Type	Mandatory (Yes/No)	Description
error_details	const obs_error_details*	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-119 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in a request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-120 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-121 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-122 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 9-123 obs_list_parts_callback_ex

Parameter	Type	Mandatory (Yes/No)	Description
uploaded_parts	**obs_uploaded_parts_total_info** *	Yes	**Explanation:** Information about the multipart task. **Restrictions**: None
parts	**obs_list_parts** *	Yes	**Explanation:** Part information array **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-124 obs_uploaded_parts_total_info

Parameter	Type	Mandatory (Yes/No)	Description
is_truncated	int	Yes	**Explanation:** Whether the result list is truncated in the response. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
nextpart_number_marker	unsigned int	Yes	**Explanation:** If not all results are returned, this parameter is returned to specify the **part_number_marker** value of the next request. **Restrictions**: None **Value range**: None **Default value**: None
initiator_id	char *	Yes	**Explanation:** Specifies the domain ID (account ID) of the initiator of the multipart upload task. **Restrictions**: None **Value range**: For details about how to obtain the account ID, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_id	char *	Yes	**Explanation:** The value of this parameter is the same as that of **initiator_id**. **Restrictions**: None **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	char *	Yes	**Explanation:** Storage class. **Restrictions**: None **Value range**: None **Default value**: None
parts_count	int	Yes	**Explanation:** Number of parts in **obs_list_parts** **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-125 obs_list_parts

Parameter	Type	Mandatory (Yes/No)	Description
part_number	unsigned int	No	**Explanation:** Number of an uploaded part. **Restrictions**: None **Value range**: None **Default value**: None
last_modified	int64_t	No	**Explanation:** Time when a part was uploaded **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** ETag value of the uploaded part. It is the unique identifier of the part content and is used to verify data consistency when parts are assembled. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
size	uint64_t	Yes	**Explanation:** Size of the uploaded part. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Storage class. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Listing Uploaded Parts

This example lists parts using **list_parts**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
// The callback function for listing parts. The information about the listed parts in the callback can be
recorded in callback_data (custom callback data).
obs_status list_parts_callback(obs_uploaded_parts_total_info* uploaded_parts,
    obs_list_parts *parts, void *callback_data);
int main()
{
    // The following code shows how to list the uploaded parts using list_parts:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // List the object names of the parts.
    char *key = "example_multi_part_upload_object_key";
    list_part_info list_part_infos = { 0 };
    list_part_infos.upload_id = "00000194178F94B64016E9C3BD03E89B";
    list_part_infos.max_parts = 1000;
    list_part_infos.part_number_marker = 0;
    // Set the response callback function.
```

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```
    obs_list_parts_handler handler = {
        {
            &response_properties_callback,
            &response_complete_callback
        },
        &list_parts_callback
    };
    obs_status ret_status;
    list_parts(&options, key, &list_part_infos, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("test list_parts successfully.\n");
    }
    else
    {
        printf("test list_parts failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The callback function for listing parts. The information about the listed parts in the callback can be
recorded in callback_data (custom callback data).
obs_status list_parts_callback(obs_uploaded_parts_total_info* uploaded_parts,
    obs_list_parts *parts, void *callback_data) {
    if (uploaded_parts == NULL) {
        printf("uploaded_parts is NULL.\n");
    }
    else {
        printf("uploaded_parts->initiator_id is %s\n", uploaded_parts->initiator_id);
        printf("uploaded_parts->initiator_display_name is %s\n", uploaded_parts->initiator_display_name);
        printf("uploaded_parts->is_truncated is %d\n", uploaded_parts->is_truncated);
        printf("uploaded_parts->nextpart_number_marker is %u\n", uploaded_parts-
>nextpart_number_marker);
        printf("uploaded_parts->owner_id is %s\n", uploaded_parts->owner_id);
        printf("uploaded_parts->owner_display_name is %s\n", uploaded_parts->owner_display_name);
        printf("uploaded_parts->storage_class is %s\n", uploaded_parts->storage_class);
        printf("uploaded_parts->parts_count is %d\n", uploaded_parts->parts_count);
        if (parts == NULL) {
            printf("parts is NULL.\n");
        }
        else {
            for (int i = 0; i < uploaded_parts->parts_count; ++i) {
                printf("parts%d->part_number is %u\n", i + 1, (parts + i)->part_number);
                printf("parts%d->last_modified is %lld\n", i + 1, (parts + i)->last_modified);
                printf("parts%d->etag is %s\n", i + 1, (parts + i)->etag);
                printf("parts%d->size is %llu\n", i + 1, (parts + i)->size);
                printf("parts%d->storage_class is %s\n", i + 1, (parts + i)->storage_class);
            }
        }
    }
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
```

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```
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
```

```
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Listing Uploaded Parts**
- **(GitHub) Sample Code**
- **OBS Error Codes**

9.7 Copying a Part (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API uploads a part for a specified multipart upload by copying data to a specified bucket.

After initiating a multipart upload task, you can add parts for this task by copying part or all of an existing object in OBS.

Assume that you copy a source object and save it as **part1**. If there is already an existing part called **part1**, the new **part1** will overwrite the existing **part1**. Then, only the new **part1** can be listed. The old **part1** is deleted. To prevent accidental deletion, ensure there is no existing object with the same name as the part involved when using this API. The source object remains unchanged during the copy process.

Restrictions

- To copy a part, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- You cannot determine whether the operation is successful solely based on **status_code** returned in the HTTP header. For example, code **200** indicates that the server has received and started to process the request. The copy operation is considered successful only when the response body contains an ETag.

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Method

```
void copy_part(const obs_options *options, char *key, obs_copy_destination_object_info *object_info,
      obs_upload_part_info *copypart, obs_put_properties *put_properties,
      server_side_encryption_params *encryption_params,obs_response_handler *handler,
      void *callback_data);
```

Request Parameters

Table 9-126 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_copy_destination_object_info** *	Yes	**Explanation:** Identifies a multipart upload. **Restrictions**: None
copypart	**obs_upload_part_info** *	Yes	**Explanation:** Information about the part to be uploaded **Restrictions**: None
put_properties	**obs_put_properties***	No	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Configuring server-side encryption **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-127 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 9-128 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 9-129 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 9-130 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-131 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-132 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 9-133 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-134 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-135 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-136 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	obs_encryption_type	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Value range**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 9-137 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 9-138 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 9-139 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-140 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-141 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-142 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-143 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-144 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 9-145 obs_copy_destination_object_info

Parameter	Type	Mandatory (Yes/No)	Description
destination_bucket	char *	Yes	**Explanation:** Destination bucket to which an object is copied. **Restrictions**: None **Value range**: None **Default value**: None
destination_key	char *	Yes	**Explanation:** Name of the destination object. **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	Yes	**Explanation:** Version ID of the source object to be copied. **Restrictions**: None **Value range**: None **Default value**: None
last_modified_return	int64_t *	Yes	**Explanation:** Last time when the object was modified **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag_return_size	int	Yes	**Explanation:** Length of the ETag returned for copying an object. **Restrictions**: None **Value range**: None **Default value**: None
etag_return	char *	Yes	**Explanation:** ETag returned for copying an object. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-146 obs_upload_part_info

Parameter	Type	Mandatory (Yes/No)	Description
part_number	unsigned int	Yes	**Explanation:** Number of the uploaded part. **Restrictions**: None **Value range**: An integer ranging from 1 to 10000. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
upload_id	int	Yes	**Explanation:** ID of a multipart upload task. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-147 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 9-148 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 9-149 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (downloading from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length of the file to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** If the object has not been modified after the specified time, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Specifies a preset ETag value. If the ETag value of the object to be downloaded or copied is different from the value of this parameter, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 9-150 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 9-151 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 9-152 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.

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Parameter	Type	Mandatory (Yes/No)	Description
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-153 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Code Examples: Copying a Part

This example copies parts using **copy_part**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to copy parts using copy_part:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
```

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```
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    char * destBucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    options.bucket_options.protocol = OBS_PROTOCOL_HTTP;
    // Parameters related to SSE-KMS encryption. If there is no parameter, leave it blank.
    server_side_encryption_params encryption_params;
    memset(&encryption_params, 0, sizeof(server_side_encryption_params));
    // ETag value returned after the part is copied.
    char etag_return[256] = { 0 };
    char *key = "example_upload_file_object_key";
        // Define the part copy information.
    obs_copy_destination_object_info object_info;
    memset(&object_info, 0, sizeof(obs_copy_destination_object_info));
    object_info.destination_bucket = destBucketName;
    object_info.destination_key = "example_multi_part_upload_object_key";
    object_info.etag_return = etag_return;
    object_info.etag_return_size = 256;
    obs_upload_part_info copypart;
    memset(©part, 0, sizeof(obs_upload_part_info));
    // Set the response callback function.
    obs_response_handler responseHandler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    char* upload_id = "000001930065F7C64014C38C138D654B";
    uint64_t object_size_total = 145184256;
    uint64_t part_size_one = 5 * 1024 * 1024;
    // Copy the first part.
    copypart.part_number = 1;
    copypart.upload_id = upload_id;
    obs_status ret_status = OBS_STATUS_BUTT;
    //Initialize put_properties.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Copy the first 5 MB of the data in the first part.
    put_properties.start_byte = 0;
    put_properties.byte_count = part_size_one;
    copy_part(&options, key, &object_info, ©part,
        &put_properties, &encryption_params, &responseHandler, &ret_status);
    if (OBS_STATUS_OK == ret_status && etag_return[0] != '\0') {
        printf(" copy part 1 successfully etag:%s. \n", etag_return);
    }
    else
    {
        printf("copy part 1 failed(%s).\n", obs_get_status_name(ret_status));
    }
    memset(etag_return, 0, sizeof(etag_return));
    // Copy the remaining data in the second part.
    copypart.part_number = 2;
    copypart.upload_id = upload_id;
    ret_status = OBS_STATUS_BUTT;
    put_properties.start_byte = part_size_one;
    put_properties.byte_count = object_size_total - part_size_one;
    copy_part(&options, key, &object_info, ©part,
        &put_properties, &encryption_params, &responseHandler, &ret_status);
    if (ret_status == OBS_STATUS_OK && etag_return[0] != '\0') {
        printf(" copy part 2 successfully etag:%s. \n", etag_return);
    }
    else
    {
        printf("copy part 2 failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
```

callback_data (custom callback data).

```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *data =
            (obs_status *)callback_data;
        *data = status;
    }
```

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```
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Copying a Part**
- **(GitHub) Sample Code**
- **OBS Error Codes**

9.8 Aborting a Multipart Upload (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API aborts a multipart upload, which is specified by its ID.

After a multipart upload is aborted, its upload ID cannot be used to upload any part. And the space occupied by all uploaded parts will be freed up. If any parts are being uploaded when you abort the upload, they may or may not be uploaded successfully. To free up the space occupied by all uploaded parts, you must abort the multipart upload after all parts have been uploaded.

Restrictions

- To abort a multipart upload, you must be the bucket owner or have the required permission (**obs:object:AbortMultipartUpload** in IAM or **AbortMultipartUpload** in a bucket policy). For details, see **Introduction to**

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OBS Access Control, **IAM Custom Policies**, and **Configuring an Object Policy**.

- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void abort_multi_part_upload(const obs_options *options, char *key, const char *upload_id,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 9-154 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
upload_id	char *	Yes	**Explanation:** Identifies a multipart upload. **Restrictions**: None **Value range**: None **Default value**: None
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-155 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None

Parameter	Type	Mandatory (Yes/No)	Description
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 9-156 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see obs_protocol. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see Creating Access Keys. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see Creating Access Keys. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see obs_storage_class. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 9-157 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 9-158 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-159 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 9-160 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 9-161 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 9-162 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-163 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-164 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 9-165 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-166 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 9-167 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-168 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-169 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 9-170 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Aborting a Multipart Upload

This example aborts a multipart upload task.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
```

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```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Object name in the multipart upload
    char *key = "example_multi_part_upload_object_key";
    // Multipart upload ID
    char *upload_id = "00000194178F7ACE4014F60E75720850";
    // Set the response callback function.
    obs_response_handler handler = {
        &response_properties_callback,
        &response_complete_callback
    };
    // Abort the multipart upload task.
    obs_status ret_status;
    abort_multi_part_upload(&options, key, upload_id, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("test abort_multi_part_upload successfully.\n");
    }
    else
    {
        printf("test abort_multi_part_upload failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
```

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```
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Aborting a Multipart Upload**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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10 Versioning (SDK for C)

10.1 Configuring Versioning for a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can enable versioning to automatically maintain previous versions of an object. When versioning is enabled, you can access earlier versions of an object to recover your data in the event of accidental actions or application failures. For more information, see **Versioning**.

This API configures versioning for a bucket.

Restrictions

- To configure versioning for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketVersioning** in IAM or **PutBucketVersioning** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void set_bucket_version_configuration(const obs_options *options, const char *version_status,
        obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 10-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
version_status	char *	Yes	**Explanation:** The versioning status of a bucket. **Restrictions**: None **Value range**: • OBS_VERSION_STATUS_ENABLED • OBS_VERSION_STATUS_SUSPENDED **Default value**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 10-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-4 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-5 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-6 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-7 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-8 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-11 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-12 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-13 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-14 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-15 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-16 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-17 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Configuring Versioning for a Bucket

This example configures versioning for a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to configure versioning for a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
```

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```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    // Set the storage class of the bucket. The following uses Standard as an example.
    options.bucket_options.storage_class = OBS_STORAGE_CLASS_STANDARD;
    obs_status ret_status = OBS_STATUS_BUTT;
    // Enable versioning for the bucket.
    set_bucket_version_configuration(&options, OBS_VERSION_STATUS_ENABLED,
        &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set bucket version successfully. \n");
    }
    else
    {
        printf("set bucket version failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
```

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```
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- Configuring Versioning for a Bucket
- (GitHub) Sample Code
- OBS Error Codes
- Versioning FAQ

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10.2 Obtaining the Versioning Status of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can enable versioning to automatically maintain previous versions of an object. When versioning is enabled, you can access earlier versions of an object to recover your data in the event of accidental actions or application failures. For more information, see **Versioning**.

This API obtains the versioning status of a bucket.

Restrictions

- To view the versioning status of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketVersioning** in IAM or **GetBucketVersioning** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_version_configuration(const obs_options *options, int status_return_size,
    char *status_return, obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 10-18 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
status_return_size	int	Yes	**Explanation:** Size of the versioning status cache **Restrictions**: None **Value range**: None **Default value**: None
status_return	char *	Yes	**Explanation:** Versioning status cache **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-19 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-20 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-21 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-22 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-23 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-24 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-25 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-26 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-27 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-28 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-29 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-30 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-31 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-32 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-33 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-34 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Obtaining the Versioning Status of a Bucket

This example obtains the versioning status of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to obtain the versioning status of a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
```

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```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    // Set the storage class of the bucket. The following uses Standard as an example.
    options.bucket_options.storage_class = OBS_STORAGE_CLASS_STANDARD;
    obs_status ret_status = OBS_STATUS_BUTT;
    // Obtain the bucket versioning status.
    char status[OBS_COMMON_LEN_256 + 1] = { 0 };
    get_bucket_version_configuration(&options, sizeof(status), status,
        &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("get bucket version successfully.\n policy=(%s)\n", status);
    }
    else
    {
        printf("get bucket version failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
```

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```
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Obtaining Bucket Versioning Status**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **Versioning FAQ**

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10.3 Obtaining an Object Version (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can call **get_object** to obtain an object version by specifying the version ID (**obs_object_info.version_id**).

If the version ID is not specified, the object of the latest version will be downloaded.

Restrictions

- To download an object version, you must be the bucket owner or have the required permission (**obs:object:GetObject** in IAM or **GetObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- Versioned objects in the Archive storage class can be downloaded only when they are in the **Restored** status.

Method

```
void get_object(const obs_options *options, obs_object_info *object_info,
        obs_get_conditions *get_conditions,
        server_side_encryption_params *encryption_params,
        obs_get_object_handler *handler, void *callback_data);
```

Request Parameters

Table 10-35 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
get_conditions	**obs_get_conditions** *	Yes	**Explanation:** Sets filter conditions of the object and read range. **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Obtains the decryption settings of an object. **Restrictions**: None
handler	**obs_get_object_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-36 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-37 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-38 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-39 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-40 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-41 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-42 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-43 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-44 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-45 obs_get_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_object_data_callback	**obs_get_object_data_callback** *	Yes	**Explanation:** Pointer to the callback function, which is used to copy the data to be downloaded from the data buffer to the custom callback data. **Restrictions**: None

Table 10-46 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 10-47 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-48 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-49 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-50 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-51 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-52 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 10-53 obs_get_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
buffer_size	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
buffer	char *	Yes	**Explanation:** Data buffer to be downloaded. Data in this buffer is copied to **callback_data** to download data. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-54 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-55 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

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Table 10-56 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-57 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

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Table 10-58 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 10-59 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Code Examples: Obtaining an Object Version

This example downloads an object version as a local file using the **get_object** function.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
int main()
{
    // The following code shows how to use the get_object function to download an object version to a
local file:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    obs_object_info object_info;
    // Set the object version to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test";
    object_info.version_id = "G00111934EA2FAC2000040180A3CB360";
    //Set the structure for storing the downloaded object data based on service requirements.
```

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```
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    // Define parameters for range-based download.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    // Download start position. The default value is 0, indicating that the download starts from byte 0.
    getcondition.start_byte = 0;
    // Download length. The default value is 0, indicating that the object is downloaded until the end.
    // getcondition.byte_count = 0;
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&options, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
```

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```
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

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10.4 Copying an Object Version (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API copies an object version in a specified bucket. You can create a copy up to 5 GB for a versioned object in a single operation.

Restrictions

- To copy a versioned object, you must be the bucket owner or have the required permission (**obs:object:PutObject** in IAM or **PutObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- This API requires carrying the information about the source bucket and object using headers. A message body cannot be carried.
- The object copy ranges from 0 GB to 5 GB. If the source object size exceeds 5 GB, you can only use the **Copying a Part (SDK for C)** function to copy.

Method

```
void copy_object(const obs_options *options, char *key, const char *version_id,
        obs_copy_destination_object_info *object_info,
        unsigned int is_copy, obs_put_properties *put_properties,
        server_side_encryption_params *encryption_params,
        obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 10-60 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_copy_destination_object_info** *	Yes	**Explanation:** Information about the object to be copied. **Restrictions**: None
is_copy	unsigned int	Yes	**Explanation:** Indicates whether the metadata of the destination object is copied from the source object or replaced with the metadata contained in the request. **Restrictions**: None **Value range**: None **Default value**: None
put_properties	**obs_put_properties***	No	**Explanation:** Properties of the uploaded object **Restrictions**: None
encryption_params	**server_side_encryption_params** *	No	**Explanation:** Server-side encryption configuration **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-61 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 10-62 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-63 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-64 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-65 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-66 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-67 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-68 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-69 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-70 server_side_encryption_params

Parameter	Type	Mandatory (Yes/No)	Description
encryption_type	**obs_encryption_type**	No	**Explanation:** Encryption type. **Restrictions**: None **Value range**: For details, see **obs_encryption_type**.
kms_server_side_encryption	char *	No	**Explanation:** Indicates that SSE-KMS is used for server-side encryption. **Restrictions**: None **Value range:** • kms • AES256 **Default value**: None
kms_key_id	char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **kms_server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: AES256 (AES256 encryption algorithm) **Default value**: None
ssec_customer_key	char *	No	**Explanation:** Indicates the key used to encrypt an object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: Base64-encoded 256-bit key **Default value**: None
des_ssec_customer_algorithm	char *	No	**Explanation:** Indicates the algorithm used to decrypt a source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None
des_ssec_customer_key	char *	No	**Explanation:** Indicates the key used to decrypt the source object. **Restrictions**: The header is used only in SSE-C mode. **Value range**: None **Default value**: None

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Table 10-71 obs_encryption_type

Value	Description
OBS_ENCRYPTION_KMS	Use the KMS encryption.
OBS_ENCRYPTION_SSEC	Use the SSE-C encryption.

Table 10-72 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 10-73 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-74 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-75 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-76 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-77 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-78 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 10-79 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	obs_name_value*	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	metadata_action_indicator	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see metadata_action_indicator.
server_callback	obs_upload_file_server_callback	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 10-80 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 10-81 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (downloading from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** If the object has not been modified after the specified time, the request is successful. Otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 10-82 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 10-83 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 10-84 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see **image_process_mode_type**.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-85 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 10-86 obs_copy_destination_object_info

Parameter	Type	Mandatory (Yes/No)	Description
destination_bucket	constchar*	Yes	**Explanation:** Name of the destination bucket for replication. **Restrictions**: None **Value range**: None **Default value**: None
destination_key	constchar*	Yes	**Explanation:** Name of the destination object. **Restrictions**: None **Value range**: None **Default value**: None
version_id	constchar*	No	**Explanation:** Version ID of the destination object. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
last_modified_return	int64_t *	Yes	**Explanation:** Time when the object was last modified, in UTC. **Restrictions**: None **Value range**: None **Default value**: None
etag_return_size	int	Yes	**Explanation:** Length of the returned ETag **Restrictions**: None **Value range**: None **Default value**: None
etag_return	char*	Yes	**Explanation:** 128-bit MD5 digest of the Base64 code of a new object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

You can call **copy_object** to pass the version ID (**version_id**) to copy a versioned object. The sample code is as follows:

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Code Examples: Copying a Versioned Object

This example copies an object version using the **copy_object** function.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to copy an object version using the copy_object function:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    char eTag[OBS_COMMON_LEN_256] = { 0 };
    int64_t lastModified;
    // Specify the destination object information.
    obs_copy_destination_object_info objectinfo = { 0 };
    objectinfo.destination_bucket = "example-dest-bucket-name";
    objectinfo.destination_key = "example_destination_key";
    objectinfo.etag_return = eTag;
    objectinfo.etag_return_size = sizeof(eTag);
    objectinfo.last_modified_return = &lastModified;
    // Set the response callback function.
    obs_response_handler responseHandler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    char* source_object_key = "example_source_object_key";
    char* source_object_version_id = "G00111934EAA2CE900004016129AC990";
    // Copy an object.
    copy_object(&options, source_object_key, source_object_version_id, &objectinfo, 1, NULL, NULL,
&responseHandler, &ret_status);
    if (OBS_STATUS_OK == ret_status && eTag[0] != '\0') {
        printf("test_copy_object successfully. \n");
    }
    else
    {
        printf("test_copy_object failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
```

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```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
```

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```
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

10.5 Restoring a Specific Archive Object Version (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

To obtain the content of an object version in the Archive storage class, you need to restore the object version first and then you can download it. After an object version is restored, a copy of it is saved in the Standard storage class. By doing so, the object version in the Archive storage class and its copy in the Standard storage class co-exist in the bucket. The copy will be automatically deleted once its retention period ends.

This API is used to restore Archive versioned objects in a specified bucket.

Restrictions

- To restore an Archive object version, you must be the bucket owner or have the required permission (**obs:object:RestoreObject** in IAM or **RestoreObject** in a bucket policy.) For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.

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- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- To prolong the validity period of the Archive data restored, you can repeatedly restore the data, but you will be billed for each restore. After a restoration, the validity period of Standard object copies will be extended, and you need to pay for storing these copies during the extended period.

Method

```
void restore_object(const obs_options *options, obs_object_info *object_info, const char *days,
        obs_tier tier,const obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 10-87 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
days	char *	Yes	**Explanation:** Retention period of the restored object **Restrictions**: None **Value range**: The value ranges from 1 to 30, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
tier	obs_tier	No	**Explanation:** Restore options: **obs_tier.OBS_TIER_EXPEDITED** or **obs_tier.OBS_TIER_STANDARD** **Restrictions**: None **Value range**: For details, see **obs_tier**.
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-88 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None

Parameter	Type	Mandatory (Yes/No)	Description
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-89 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-90 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-91 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-92 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-93 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-94 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-95 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-96 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-97 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: • The name of each object in a bucket must be unique. • The object specified must be in the Archive storage class. Otherwise, an error is reported. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-98 obs_tier

Value	Description
OBS_TIER_NULL	Default invalid value.
OBS_TIER_STANDARD	It indicates that objects can be restored from Archive storage within 3 to 5 hours.

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Value	Description
OBS_TIER_EXPEDITED	It indicates that objects can be quickly restored from Archive storage within 1 to 5 minutes.

Table 10-99 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-100 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-101 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-102 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: To obtain the key ID, see **Viewing a CMK**. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==** **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-103 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-104 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-105 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

You can call **restore_object** to restore an Archive object version by specifying **obs_object_info.version_id**. Sample code is as follows:

Code Examples: Restoring an Archive Object Version

This example calls **restore_object** to pass the version ID (**obs_object_info.version_id**) to restore an Archive object version.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code calls restore_object to pass the version ID (obs_object_info.version_id) to restore an Archive object version:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
```

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```
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test_restore";
    object_info.version_id = "G00111934ED39BD60000401401EDE57B";
    // Set the response callback function.
    obs_response_handler handler =
    {
      &response_properties_callback, &response_complete_callback
    };
    // Restore the object.
    obs_tier tier = OBS_TIER_EXPEDITED;
    obs_status ret_status = OBS_STATUS_BUTT;
    const char* storedDays = "1";
    options.request_options.auth_switch = OBS_OBS_TYPE;
    restore_object(&options, &object_info, storedDays, tier, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("restore object successfully. \n");
    }
    else
    {
        printf("restore object failed(%s).\n", obs_get_status_name(ret_status));
        return;
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
```

```
    if (callback_data) {
        obs_status *data =
            (obs_status *)callback_data;
        *data = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);         \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
```

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```
    return OBS_STATUS_OK;
}
```

10.6 Listing Object Versions in a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API lists some or all of the object versions in a bucket. You can use parameters such as the prefix, number of returned object versions, and start position to list the object versions that meet specified criteria. Returned object versions are listed in alphabetical order by object name.

Restrictions

- To list object versions in a bucket, you must be the bucket owner or have the required permission (**obs:bucket:ListBucketVersions** in IAM or **ListBucketVersions** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void list_versions(const obs_options *options, const char *prefix, const char *key_marker,
    const char *delimiter, int maxkeys, const char *version_id_marker,
    obs_list_versions_handler *handler, void *callback_data);
```

Request Parameters

Table 10-106 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
prefix	char *	No	**Explanation:** Name prefix that the objects to be listed must contain **Restrictions**: None **Value range**: None **Default value**: None
key_marker	char *	No	**Explanation:** Object name to start with when listing object versions in a bucket. All object versions following the specified value are listed in lexicographical order by object name. **Restrictions**: None **Value range**: None **Default value**: None
delimiter	char *	No	**Explanation:** The character used to group object names. If the object name contains the value specified by the **delimiter** parameter, the string from the first character to the first delimiter in the object name (excluding the prefix if **prefix** is specified) is grouped into one **common_prefixes** to be returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id_marker	char *	No	**Explanation:** Version ID to start with when listing objects in a bucket. All objects are listed in alphabetical order by object name and version ID. This parameter must be used together with **key_marker**. **Restrictions**: None **Value range**: None **Default value**: None
maxkeys	int	Yes	**Explanation:** Maximum number of objects that can be listed. **Restrictions**: If the specified value is greater than **1000**, **1000** is used by default. **Value range**: An integer from **1** to **1000** **Default value**: 1000
handler	**obs_list_versions_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-107 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 10-108 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-109 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-110 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-111 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-112 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-113 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-114 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-115 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-116 obs_list_versions_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
list_versions_callback	**obs_list_versions_callback** *	Yes	**Explanation:** The callback function pointer tag. The listed results in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-117 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 10-118 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-119 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-120 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None

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Parameter	Type	Mandatory (Yes/No)	Description
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-121 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-122 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-123 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 10-124 obs_list_versions_callback

Parameter	Type	Mandatory (Yes/No)	Description
is_truncated	int	Yes	**Explanation:** Indicates whether the returned result list is truncated. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
next_key_marker	const char *	Yes	**Explanation:** Object name to start with upon the next request for listing versioning objects in a bucket. This element is returned when not all the objects are listed. You can set **key_marker** to this value in the next request to list the remaining multipart uploads. **Restrictions**: This parameter is only available for listing objects with multiple versions. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
next_versionid_marker	const char *	Yes	**Explanation:** Version ID to start with in the next request for listing object versions. It must be used together with **next_key_marker**. This parameter is returned if some listing results were not returned. You can set **version_id_marker** of the next request to the returned value to list the remaining results. **Restrictions**: This parameter is only available for listing objects with multiple versions. **Value range**: The value must contain 32 characters. **Default value**: None
versions	const **obs_list_versions***	Yes	**Explanation:** Listed information about versions. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-125 obs_list_versions

Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	const char *	No	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
prefix	const char *	No	**Explanation:** Name prefix that the objects to be listed must contain **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key_marker	const char *	No	**Explanation:** Object name to start with when listing object versions in a bucket. All object versions following the specified value are listed in lexicographical order by object name. **Restrictions**: This parameter is only available for listing objects with multiple versions. **Value range**: The value of **nextKeyMarker** in the response body of the last request. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delimiter	const char *	No	**Explanation:** This parameter is used to group object names. If a prefix is specified, objects with the same string from the prefix to the first delimiter are grouped into one **CommonPrefixes**. If no prefix is specified, objects with the same string from the first character to the first delimiter are grouped into one **CommonPrefixes**. Assume that a bucket has objects **abcd**, **abcde**, and **bbcde** in it. If **delimiter** is set to **d** and **prefix** is set to **a**, objects **abcd** and **abcde** are grouped into a **commonPrefix** with **abcd** as the prefix. If only **delimiter** is set to **d**, objects **abcd** and **abcde** are grouped into a **commonPrefix** with **abcd** as the prefix, and **bbcde** is grouped separately into another **commonPrefix** with **bbcd** as the prefix. For a parallel file system, if this parameter is not specified, all the content in the directory is recursively listed by default, including the content in subdirectories. In big data scenarios, file systems usually have multiple directory levels and each directory level has a large number of objects. In such case, you are advised to configure **[delimiter=/]** to list the content in the current directory but exclude the content in subdirectories, thereby making the listing more efficient. **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_keys	const char *	No	**Explanation:** The maximum number of object versions returned in the response in alphabetical order. **Restrictions**: If the specified value is greater than **1000**, **1000** is used by default. **Value range**: An integer from **1** to **1000** **Default value**: 1000
versions	**obs_version** *	No	**Explanation:** Object information **Restrictions**: None
versions_count	int	No	**Explanation:** Number of versions. **Restrictions**: None **Value range**: None **Default value**: None
common_prefixes	const char **	No	**Explanation:** List of object name prefixes grouped according to the **delimiter** parameter (if specified) **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
common_prefixes_count	int	No	**Explanation:** Number of common prefixes. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-126 obs_version

Parameter	Type	Mandatory (Yes/No)	Description
key	const char *	No	**Explanation:** Object name. An object is uniquely identified by an object name in a bucket. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
is_latest	const char *	No	**Explanation:** Whether the object is the latest version. **Restrictions**: None **Value range**: None **Default value**: None
last_modified	int64_t	No	**Explanation:** Time when the object was last modified, in UTC. **Restrictions**: None **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag value is a hash of the object. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag after MD5 encryption. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
size	uint64_t	No	**Explanation:** Object size in bytes. **Restrictions**: None **Value range**: None **Default value**: None
owner_id	const char *	No	**Explanation:** Domain ID (account ID) of the object owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: None **Value range**: None **Default value**: None
is_delete	const char *	No	**Explanation:** Whether the object version is a delete marker. **Restrictions**: None **Value range**: None **Default value**: None

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Code Examples: Listing Object Versions

This example calls the **list_versions** function to list object versions in a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <time.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
**callback_data** (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
typedef struct list_versions_callback_data
{
    char bucket_name[1024];
    char prefix[1024];
    char key_marker[1024];
    char delimiter[1024];
    int max_keys;
    int is_truncated;
    char next_key_marker[1024];
    char next_versionId_marker[1024];
    int keyCount;
    int allDetails;
    obs_status ret_status;
} list_versions_callback_data;
static void list_versions_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
static obs_status listVersionsCallback(int is_truncated, const char *next_key_marker, const char
*next_versionId_marker,
    const obs_list_versions *list_versions, void *callback_data);
int main()
{
    // The following code shows how to use the **list_versions** function to list object versions in a bucket:
    // Call the **obs_initialize** method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (**host_name**), access keys
(**access_key_id** and **access_key_secret**), bucket name (**bucket_name**), and bucket storage class
(**storage_class**).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for **host_name**. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables **ACCESS_KEY_ID** and
**SECRET_ACCESS_KEY**.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, **example-bucket-name**.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    char * prefix = "example";
    char * key_marker = "";
    char * delimiter = "/";
    int maxkeys = 1000;
    // Set the response callback function.
    obs_list_versions_handler list_versions_handler =
    {
        { &response_properties_callback, &list_versions_complete_callback },
        &listVersionsCallback
    };
    // Create and initialize callback data.
    list_versions_callback_data data;
    char* version_id_marker = NULL;
    memset(&data, 0, sizeof(list_versions_callback_data));
    data.ret_status = OBS_STATUS_BUTT;
```

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```
    snprintf(data.next_key_marker, sizeof(data.next_key_marker), "%s", key_marker);
    if (version_id_marker)
    {
        snprintf(data.next_versionId_marker, sizeof(data.next_versionId_marker), "%s", version_id_marker);
    }
    data.keyCount = 0;
    data.allDetails = 1;
    data.is_truncated = 0;
    // List object versions. Specify the object prefix using prefix and the number of versions to be listed using
maxkeys. Objects can be listed in pagination.
    // Specify delimiter as the character for listing by group. For listing by folder, set delimiter to /.
    // Use key_marker to specify the start position for listing. Specify version_id_marker as the start version
ID for listing.
    list_versions(&options, prefix, key_marker, delimiter, maxkeys, version_id_marker,
        &list_versions_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("list versions successfully. \n");
    }
    else
    {
        printf("list versions failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
```

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```
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
static void list_versions_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    if (callback_data) {
        list_versions_callback_data *data = (list_versions_callback_data*)callback_data;
        data->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
static void printListVersionsHeader(int allDetails)
{
    printf("%-30s  %-20s  %-5s  %-32s",
        "              Key",
        "    Last Modified", " Size", "           VersionId");
    if (allDetails) {
        printf("  %-34s  %-12s  %-12s  %-12s",
            "               ETag",
            "Storage Class",
            "Owner ID",
            "                   Display Name");
    }
    printf("\n");
    printf("------------------------------  "
```

```
        "--------------------  -----  --------------------------------");
    if (allDetails) {
        printf("  ----------------------------------  ------------  --------------------------------  ------------");
    }
    printf("\n");
}
static obs_status listVersionsCallback(int is_truncated, const char *next_key_marker, const char
*next_versionId_marker,
    const obs_list_versions *list_versions, void *callback_data)
{
    list_versions_callback_data *data =
        (list_versions_callback_data *)callback_data;
    data->is_truncated = is_truncated;
    if ((!next_key_marker || !next_key_marker[0]) && list_versions->versions_count) {
        next_key_marker = list_versions->versions[list_versions->versions_count - 1].key;
    }
    if (next_key_marker) {
        snprintf(data->next_key_marker, sizeof(data->next_key_marker), "%s", next_key_marker);
    }
    else {
        data->next_key_marker[0] = 0;
    }
    if ((!next_versionId_marker || !next_versionId_marker[0]) && list_versions->versions_count) {
        next_versionId_marker = list_versions->versions[list_versions->versions_count - 1].version_id;
    }
    if (next_versionId_marker) {
        snprintf(data->next_versionId_marker, sizeof(data->next_versionId_marker), "%s",
next_versionId_marker);
    }
    else {
        data->next_versionId_marker[0] = 0;
    }
    if (NULL != list_versions->bucket_name)
    {
        printf("Name = %s\n", list_versions->bucket_name);
    }
    if (NULL != list_versions->prefix)
    {
        printf("prefix = %s\n", list_versions->prefix);
    }
    if (NULL != list_versions->key_marker)
    {
        printf("key_marker = %s\n", list_versions->key_marker);
    }
    if (NULL != list_versions->delimiter)
    {
        printf("delimiter = %s\n", list_versions->delimiter);
    }
    if (NULL != list_versions->max_keys)
    {
        printf("max_keys = %s\n", list_versions->max_keys);
    }
    if (list_versions->versions_count && !data->keyCount) {
        printListVersionsHeader(data->allDetails);
    }
    int i;
    for (i = 0; i < list_versions->versions_count; i++) {
        obs_version *version = &(list_versions->versions[i]);
        char timebuf[256] = { 0 };
        time_t t = (time_t)version->last_modified;
        strftime(timebuf, sizeof(timebuf), "%Y-%m-%dT%H:%M:%SZ",
            gmtime(&t));
        char sizebuf[16] = { 0 };
        if (version->size < 100000) {
            sprintf_s(sizebuf, sizeof(sizebuf), "%5llu", (unsigned long long) version->size);
        }
        else if (version->size < (1024 * 1024)) {
            sprintf_s(sizebuf, sizeof(sizebuf), "%4lluK",
                ((unsigned long long) version->size) / 1024ULL);
```

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```
        }
        else if (version->size < (10 * 1024 * 1024)) {
            float f = version->size;
            f /= (1024 * 1024);
            sprintf_s(sizebuf, sizeof(sizebuf), "%1.2fM", f);
        }
        else if (version->size < (1024 * 1024 * 1024)) {
            sprintf_s(sizebuf, sizeof(sizebuf), "%4lluM",
                ((unsigned long long) version->size) /
                (1024ULL * 1024ULL));
        }
        else {
            float f = (version->size / 1024);
            f /= (1024 * 1024);
            sprintf_s(sizebuf, sizeof(sizebuf), "%1.2fG", f);
        }
        printf("%-30s  %s  %s  %-32s", version->key, timebuf, sizebuf, version->version_id);
        if (data->allDetails) {
            printf("  %-34s  %-12s  %-32s  %-12s",
                version->etag,
                version->storage_class,
                version->owner_id ? version->owner_id : "",
                version->owner_display_name ?
                version->owner_display_name : "");
        }
        printf("\n");
    }
    printf("versions_count=%d\n", list_versions->versions_count);
    printf("--------------------------------------------------------------------------------");
    printf("--------------------------------");
    printf("--------------------------------------------------------------------------------\n");
    for (i = 0; i < list_versions->common_prefixes_count; i++)
    {
        printf("commonPrefix => prefix = %s\n", *(list_versions->common_prefixes + i));
    }
    data->keyCount += list_versions->versions_count;
    return OBS_STATUS_OK;
}
```

NOTE

- Information about a maximum of 1000 versioning objects can be listed each time. If a bucket contains more than 1000 objects and **is_truncated** is **true** in the returned result, not all versioning objects are listed. In such cases, you can use **next_key_marker** and **next_versionId_marker** to obtain the start position for next listing.
- If you want to obtain all versioning objects in a specified bucket, you can use the paging mode for listing objects.

Helpful Links

- **Listing Objects in a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Buckets and Objects**

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10.7 Setting a Pre-defined ACL for an Object Version (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

OBS allows you to control access to versioned objects. By default, only the versioned object creator has the read and write permissions on the object. You can set access control policies for versioned objects. For example, if an object is configured with the public access policy, all users are allowed to read the object. If a versioned object is encrypted with SSE-KMS, the ACL configured for it is not in effect in the cross-tenant case.

You can set an access control policy when uploading a versioned object or call an ACL API to modify or obtain the ACL of an existing object.

This API sets an ACL for a versioned object in a specified bucket.

Restrictions

- To configure an object ACL, you must be the bucket owner or have the required permission (**obs:object:PutObjectAcl** in IAM or **PutObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- An object ACL supports a maximum of 100 **Grants**.

Method

```
void set_object_acl_by_head(const obs_options *options, obs_object_info *object_info,
    obs_canned_acl canned_acl, obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 10-127 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
canned_acl	**obs_canned_acl**	Yes	**Explanation:** Pre-defined ACL **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-128 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 10-129 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-130 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-131 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-132 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-133 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-134 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-135 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-136 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-137 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-138 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-139 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-140 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-141 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-142 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-143 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 10-144 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-145 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.

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Value	Description
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Code Examples: Setting an Object Version ACL

This example sets the ACL for an object version using **set_object_acl_by_head**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
```

callback_data (custom callback data).

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```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to set object properties using set_object_acl_by_head:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    obs_canned_acl canned_acl = OBS_CANNED_ACL_PUBLIC_READ_WRITE;
    obs_object_info object_info;
    object_info.key = "example_get_file_test";
    object_info.version_id = "G00111934EAA2CE900004016129AC990";
    // Set a pre-defined ACL for an object.
    set_object_acl_by_head(&options, &object_info, canned_acl, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set object acl by head successfully. \n");
    }
    else
    {
        printf("set object acl by head failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
```

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```
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
```

```
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

10.8 Setting an Object Version ACL Directly (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

OBS allows you to control access to versioned objects. By default, only the versioned object creator has the read and write permissions on the object. You can set access control policies for versioned objects. For example, if an object is configured with the public access policy, all users are allowed to read the object. If a versioned object is encrypted with SSE-KMS, the ACL configured for it is not in effect in the cross-tenant case.

You can set an access control policy when uploading a versioned object or call an ACL API to modify or obtain the ACL of an existing object.

This API sets an ACL for a versioned object in a specified bucket.

Restrictions

- To configure an object ACL, you must be the bucket owner or have the required permission (**obs:object:PutObjectAcl** in IAM or **PutObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- An object ACL supports a maximum of 100 **Grants**.

Method

```
void set_object_acl(const obs_options *options, manager_acl_info *aclinfo, obs_response_handler *handler,
void *callback_data);
```

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Request Parameters

Table 10-146 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options** *	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
aclinfo	**manager_acl_info** *	Yes	**Explanation:** Structure for managing ACL permission information **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-147 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-148 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-149 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-150 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-151 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-152 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-153 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-154 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-155 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-156 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-157 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-158 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-159 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-160 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-161 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-162 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 10-163 manager_acl_info

Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: If the object is not a versioned object, set the version to **NULL**.

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Parameter	Type	Mandatory (Yes/No)	Description
owner_id	char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_display_name	char *	Yes	**Explanation:** Display name of a user **Restrictions**: None **Value range**: None **Default value**: None
acl_grant_count_return	int *	Yes	**Explanation:** Length of the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
object_delivered	**obs_object_delivered**	Yes	**Explanation:** Whether the ACL of the bucket applies to its objects **Restrictions**: None **Value range**: For details, see **obs_object_delivered**. **Default value**: **OBJECT_DELIVERED_TRUE** (The ACL of the bucket applies to its objects.)

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Parameter	Type	Mandatory (Yes/No)	Description
acl_grants	obs_acl_grant *	Yes	**Explanation:** Permission information structure. **Restrictions**: None

Table 10-164 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-165 obs_object_delivered

Value	Description
OBJECT_DELIVERED_TRUE	The ACL of the bucket applies to its objects.
OBJECT_DELIVERED_FALSE	The ACL of the bucket does not apply to its objects.

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Table 10-166 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None
permission	**obs_permission**	Yes	**Explanation:** Bucket ACL. **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	**obs_bucket_delivered**	Yes	**Explanation:** Whether the bucket ACL is applied to the objects in the bucket **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: **BUCKET_DELIVERED_FALSE** (The ACL of the bucket does not apply to its objects.)

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Table 10-167 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 10-168 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

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Table 10-169 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

Code Examples: Setting an Object Version ACL

This example sets the ACL for an object version using **set_object_acl**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to set the ACL for an object version using set_object_acl:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Define the ACL of an object version.
    manager_acl_info aclinfo;
    memset(&aclinfo, 0, sizeof(aclinfo));
    aclinfo.object_info.key = "example_source_object_key";
    aclinfo.object_info.version_id = "G00111934EAA2CE900004016129AC990";
    aclinfo.owner_id = "1****************************a";
    // Set the ACL.
    int acl_grant_count = 1;
    aclinfo.acl_grant_count_return = &acl_grant_count;
    aclinfo.acl_grants = (obs_acl_grant*)malloc(sizeof(obs_acl_grant) * acl_grant_count);
    // Set the tenant ID of the authorized account (canonical_user.id).
    strcpy(aclinfo.acl_grants[0].grantee.canonical_user.id, "0****************************0");
    strcpy(aclinfo.acl_grants[0].grantee.canonical_user.display_name, "name1");
    aclinfo.acl_grants[0].grantee_type = OBS_GRANTEE_TYPE_CANONICAL_USER;
```

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```
    // Specify the ACL. The read permission is used as an example.
    aclinfo.acl_grants[0].permission = OBS_PERMISSION_READ;
    // Set the ACL.
    set_object_acl(&options, &aclinfo, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set object acl successfully. \n");
    }
    else
    {
        printf("set object acl failed(%s).\n", obs_get_status_name(ret_status));
    }
    free(aclinfo.acl_grants);
    aclinfo.acl_grants = NULL;
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
```

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```
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

10.9 Obtaining the ACL of an Object Version (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

OBS provides access control over buckets. You can use an access policy to define whether a user can perform certain operations on a specific bucket. OBS access control can be implemented using IAM permissions, bucket policies, and ACLs (including bucket and object ACLs). For more information, see **Introduction to OBS Access Control**.

A versioned object ACL grants permissions to another Huawei Cloud account and its IAM users, rather than the current account and its IAM users. Authorization is performed based on objects. An ACL policy is set for an object. Therefore, you must specify the object name when setting an ACL policy. The permissions granted by a versioned object ACL include the view and edit access to the object and the set ACL. For more information, see **ACLs**.

This API obtains the ACL of an object version.

Restrictions

- To obtain an object ACL, you must be the bucket owner or have the required permission (**obs:object:GetObjectAcl** in IAM or **GetObjectAcl** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_object_acl(const obs_options *options, manager_acl_info *aclinfo, obs_response_handler *handler,
void *callback_data);
```

Request Parameters

Table 10-170 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const**obs_options** *	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
aclinfo	manager_acl_info *	Yes	**Explanation:** Structure for managing ACL permission information **Restrictions**: None
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-171 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-172 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-173 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-174 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-175 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-176 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-177 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-178 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-179 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-180 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-181 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-182 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-183 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.

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Parameter	Type	Mandatory (Yes/No)	Description
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-184 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-185 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-186 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 10-187 manager_acl_info

Parameter	Type	Mandatory (Yes/No)	Description
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: If the object is not a versioned object, set the version to **NULL**.

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Parameter	Type	Mandatory (Yes/No)	Description
owner_id	char *	Yes	**Explanation:** Account (domain) ID of the bucket owner. **Restrictions**: None **Value range**: For details about how to obtain the account ID of the bucket owner, see **How Do I Get My Account ID and User ID?** **Default value**: None
owner_display_name	char *	Yes	**Explanation:** Display name of a user **Restrictions**: None **Value range**: None **Default value**: None
acl_grant_count_return	int *	Yes	**Explanation:** Length of the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
object_delivered	**obs_object_delivered**	Yes	**Explanation:** Whether the ACL of the bucket applies to its objects **Restrictions**: None **Value range**: For details, see **obs_object_delivered**. **Default value**: **OBJECT_DELIVERED_TRUE** (The ACL of the bucket applies to its objects.)

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Parameter	Type	Mandatory (Yes/No)	Description
acl_grants	obs_acl_grant *	Yes	**Explanation:** Permission information structure. **Restrictions**: None

Table 10-188 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-189 obs_object_delivered

Value	Description
OBJECT_DELIVERED_TRUE	The ACL of the bucket applies to its objects.
OBJECT_DELIVERED_FALSE	The ACL of the bucket does not apply to its objects.

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Table 10-190 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None
permission	**obs_permission**	Yes	**Explanation:** Bucket ACL. **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	**obs_bucket_delivered**	Yes	**Explanation:** Whether the bucket ACL is applied to the objects in the bucket **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: **BUCKET_DELIVERED_FALSE** (The ACL of the bucket does not apply to its objects.)

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Table 10-191 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 10-192 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

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Table 10-193 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

Code Examples: Obtaining the ACL of an Object Version

This example obtains the ACL of an object version using **get_object_acl**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
manager_acl_info* malloc_acl_info();
void free_acl_info(manager_acl_info **acl);
void print_acl(manager_acl_info* acl);
int main()
{
    // The following code shows how to obtain the ACL of an object version using get_object_acl:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    options.bucket_options.protocol = OBS_PROTOCOL_HTTP;
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Object ACL information
    manager_acl_info *aclinfo = malloc_acl_info();
    aclinfo->object_info.key = "example_source_object_key";
    aclinfo->object_info.version_id = "G00111934EAA2CE900004016129AC990";
    // Obtain the object ACL.
    get_object_acl(&options, aclinfo, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("get object acl successfully. \n");
        print_acl(aclinfo);
```

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```
    }
    else
    {
        printf("get object acl failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Free the memory.
    free_acl_info(&aclinfo);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
```

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```
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    (void)callback_data;
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
void print_acl(manager_acl_info* acl) {
    if (acl == NULL) {
        printf("acl is NULL.\n");
        return;
    }
    printf("object key :%s\n", acl->object_info.key);
    printf("object version_id :%s\n", acl->object_info.version_id);
    printf("object owner_id :%s\n", acl->owner_id);
    printf("object owner_display_name :%s\n", acl->owner_display_name);
    switch (acl->object_delivered)
    {
    case OBJECT_DELIVERED_TRUE:
        printf("object acl delivered.\n");
        break;
    default:
        printf("object acl not delivered.\n");
        break;
    }
    if (acl->acl_grant_count_return == NULL) {
        printf("acl_grant_count_return is NULL.\n");
        return;
    }
    printf("object acl_grant_count :%d\n", *acl->acl_grant_count_return);
    if (acl->acl_grants == NULL) {
        printf("acl_grants is NULL.\n");
        return;
    }
```

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```
    for (int i = 0; i < *acl->acl_grant_count_return; ++i) {
        obs_acl_grant* acl_grant = acl->acl_grants + i;
        printf("acl %d\n", i + 1);
        switch (acl_grant->bucket_delivered)
        {
        case BUCKET_DELIVERED_TRUE:
            printf("object acl delivered from bucket.\n");
            break;
        default:
            printf("object acl not delivered from bucket.\n");
            break;
        }
        switch (acl_grant->grantee_type)
        {
        case OBS_GRANTEE_TYPE_CANONICAL_USER:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_CANONICAL_USER.\n");
            break;
        case OBS_GRANTEE_TYPE_ALL_OBS_USERS:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_ALL_OBS_USERS.\n");
            break;
        case OBS_GRANTEE_TYPE_ALL_USERS:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_ALL_USERS.\n");
            break;
        case OBS_GRANTEE_TYPE_LOG_DELIVERY:
            printf("object acl grantee_type is OBS_GRANTEE_TYPE_LOG_DELIVERY.\n");
            break;
        default:
            printf("object acl grantee_type is unknown.\n");
            break;
        }
        switch (acl_grant->permission)
        {
        case OBS_PERMISSION_READ:
            printf("object acl grantee_type is OBS_PERMISSION_READ.\n");
            break;
        case OBS_PERMISSION_WRITE:
            printf("object acl grantee_type is OBS_PERMISSION_WRITE.\n");
            break;
        case OBS_PERMISSION_READ_ACP:
            printf("object acl grantee_type is OBS_PERMISSION_READ_ACP.\n");
            break;
        case OBS_PERMISSION_WRITE_ACP:
            printf("object acl grantee_type is OBS_PERMISSION_WRITE_ACP.\n");
            break;
        case OBS_PERMISSION_FULL_CONTROL:
            printf("object acl grantee_type is OBS_PERMISSION_FULL_CONTROL.\n");
            break;
        default:
            printf("object acl grantee_type is unknown.\n");
            break;
        }
        printf("acl_grant->grantee.canonical_user.display_name: %s\n", acl_grant-
>grantee.canonical_user.display_name);
        printf("acl_grant->grantee.canonical_user.id: %s\n", acl_grant->grantee.canonical_user.id);
    }
}
manager_acl_info* malloc_acl_info()
{
    manager_acl_info *aclinfo = (manager_acl_info*)malloc(sizeof(manager_acl_info));
    memset(aclinfo, 0, sizeof(manager_acl_info));
    size_t acl_grants_size = OBS_MAX_ACL_GRANT_COUNT * sizeof(obs_acl_grant);
    aclinfo->acl_grants = (obs_acl_grant*)malloc(acl_grants_size);
    memset(aclinfo->acl_grants, 0, acl_grants_size);
    aclinfo->acl_grant_count_return = (int*)malloc(sizeof(int));
    *(aclinfo->acl_grant_count_return) = 0;
    size_t owner_id_size = (OBS_MAX_GRANTEE_USER_ID_SIZE + 1) * sizeof(char);
    size_t owner_display_name_size = (OBS_MAX_GRANTEE_USER_ID_SIZE + 1) * sizeof(char);
    aclinfo->owner_id = (char *)malloc(owner_id_size);
    memset(aclinfo->owner_id, 0, owner_id_size);
```

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```
    aclinfo->owner_display_name = (char *)malloc(owner_display_name_size);
    memset(aclinfo->owner_display_name, 0, owner_display_name_size);
    return aclinfo;
}
void free_acl_info(manager_acl_info **acl)
{
    manager_acl_info *aclinfo = *acl;
    free(aclinfo->acl_grants);
    free(aclinfo->owner_display_name);
    free(aclinfo->owner_id);
    free(aclinfo->acl_grant_count_return);
    free(aclinfo);
}
```

10.10 Deleting an Object Version (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API deletes an object version in the specified bucket to save space and costs.

Restrictions

- To delete an object version, you must be the bucket owner or have the required permission (**obs:object:DeleteObject** in IAM or **DeleteObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- If versioning is not enabled for a bucket, deleted object versions cannot be restored.

Method

```
void delete_object(const obs_options *options, obs_object_info *object_info,
        obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 10-194 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
object_info	**obs_object_info** *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-195 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure** *	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-196 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-197 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-198 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-199 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-200 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-201 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-202 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-203 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-204 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-205 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-206 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-207 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-208 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-209 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-210 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 10-211 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples

This example deletes an object version using **delete_object**.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
int main()
{
    // The following code shows how to delete a single object version using delete_object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
```

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```
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Information about the object to be deleted.
    obs_object_info object_info;
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_source_object_key";
    object_info.version_id = "G00111934EAA2CE900004016129AC990";
    // Set the response callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback, &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Delete the object.
    delete_object(&options, &object_info, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        printf("delete object successfully. \n");
    }
    else
    {
        printf("delete object failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
```

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```
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

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10.11 Batch Deleting Object Versions (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API deletes object versions in a batch in the specified bucket to save space and costs.

Restrictions

- To delete object versions, you must be the bucket owner or have the required permission (**obs:object:DeleteObject** in IAM or **DeleteObject** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Configuring an Object Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- If versioning is not enabled for a bucket, deleted object versions cannot be restored.

Method

```
void batch_delete_objects(const obs_options *options, obs_object_info *object_info,obs_delete_object_info *delobj,
                          obs_put_properties *put_properties, obs_delete_object_handler *handler, void *callback_data);
```

Request Parameters

Table 10-212 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
object_info	obs_object_info *	Yes	**Explanation:** Object name and version ID. **Restrictions**: For a non-versioned object, set the version ID to 0.
delobj	obs_delete_object_info*	Yes	**Explanation:** Specifies the number of objects to be deleted and the quiet mode. **Restrictions**: None
put_properties	obs_put_properties*	No	**Explanation:** Sets the verification properties of the object to be deleted. **Restrictions**: None
handler	obs_delete_object_handler*	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-213 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 10-214 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 10-215 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 10-216 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-217 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 10-218 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 10-219 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 10-220 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-221 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-222 obs_delete_object_info

Parameter	Type	Mandatory (Yes/No)	Description
keys_number	unsigned int	Yes	**Explanation:** Number of deleted object names. **Restrictions**: None **Value range**: None **Default value**: None
quiet	int	No	**Explanation:** Specifies whether to use the quiet mode. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-223 obs_delete_object_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delete_object_data_callback	obs_delete_object_data_callback *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 10-224 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 10-225 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-226 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-227 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-228 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-229 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-230 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 10-231 obs_object_info

Parameter	Type	Mandatory (Yes/No)	Description
key	char *	Yes	**Explanation:** Object name **Restrictions**: None **Value range**: None **Default value**: None
version_id	char *	No	**Explanation:** Object version ID. If the object is not a versioned object, set **version_id** to **NULL**. **Restrictions**: None **Value range**: None **Default value**: None

Table 10-232 obs_put_properties

Parameter	Type	Mandatory (Yes/No)	Description
content_type	char *	Yes	**Explanation:** It specifies the file type of an object when it is downloaded. **Restrictions**: None **Value range**: See the Content-Type values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
md5	char *	Yes	**Explanation:** Indicates the base64-encoded digest of the object data. It is provided for the OBS server to verify data integrity. The OBS server will compare this MD5 value with the MD5 value calculated based on the object data. If the two values are not the same, HTTP status code **400** is returned. **Restrictions**: The MD5 value of the object must be Base64 encoded. If the MD5 value is not specified, the OBS server will not verify the MD5 value of the object. **Value range**: Base64-encoded 128-bit MD5 value of the request body calculated according to RFC 1864. Example: **n58IG6hfM7vqI4K0vnWpog==** **Default value**: None
cache_control	char *	Yes	**Explanation:** It specifies the cache behavior of the web page when an object is downloaded. **Restrictions**: None **Value range**: See the Cache-Control values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_disposition_filename	char *	Yes	**Explanation:** It specifies the name of an object when it is downloaded. For example, if the value is set to **test.txt**, that is equivalent to adding the **Content-Disposition: attachment; filename=test.txt** header. **Restrictions**: None **Value range**: See the Content-Disposition values defined in HTTP. **Default value**: None
content_encoding	char *	Yes	**Explanation:** It specifies the content encoding format when an object is downloaded. **Restrictions**: None **Value range**: See the Content-Encoding values defined in HTTP. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	char *	Yes	**Explanation:** If the bucket is configured with website hosting, the request for obtaining the object can be redirected to another object in the bucket or an external URL. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ **Restrictions**: The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. **Value range**: None **Default value**: None
get_conditions	**obs_get_conditions** *	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None
start_byte	uint64_t	No	**Explanation:** Where the copy starts in the object **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (The copy starts from the first byte of the object.)

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Parameter	Type	Mandatory (Yes/No)	Description
byte_count	uint64_t	No	**Explanation:** Specifies the copy length. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None
upload_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
expires	int64_t	No	**Explanation:** Value of the Expires header in the OBS request. It specifies the cache expiration time of the web page when the object is downloaded. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_expires	int64_t	No	**Explanation:** Specifies when an object expires. It is measured in days. Once the object expires, it is automatically deleted. **Restrictions**: The value must be greater than the number of days that have passed since the object was created. For example, if the object was uploaded 10 days ago, you must specify a value greater than 10. **Value range**: The value is an integer greater than 0. **Default value**: None
canned_acl	**obs_canned_acl**	No	**Explanation:** Access control policy **Restrictions**: None **Value range**: For details, see **obs_canned_acl**.
az_redundancy	**obs_az_redundancy**	No	**Explanation:** Specifies a series of parameters for copying an object. **Restrictions**: None **Value range**: For details, see **obs_az_redundancy**.
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data	**obs_name_value***	No	**Explanation:** Custom metadata of the object. OBS allows you to use custom metadata to manage objects. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions:** • If a request carries this header field, the response message must contain this header field. • The total size of all custom metadata cannot exceed 8 KB. To measure the size, calculate the sum of bytes of all UTF-8 encoded keys and values. • The custom metadata keys are case-insensitive, but are stored in lowercase by OBS. The key values are case-sensitive. • Both custom metadata keys and their values must conform to US-ASCII standards. If non-ASCII or unrecognizable characters are required, they must be encoded and decoded in URL or Base64 on the client, because the server does not perform such operations.
metadata_action	**metadata_action_indicator**	No	**Explanation:** Metadata operation directive. **Restrictions**: None **Value range**: For details, see **metadata_action_indicator**.
server_callback	**obs_upload_file_server_callback**	No	**Explanation:** Parameters related to server callback. **Restrictions**: None

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Table 10-233 obs_canned_acl

Value	Description
OBS_CANNED_ACL_PRIVATE	Private read and write. A bucket or object can only be accessed by its owner.
OBS_CANNED_ACL_PUBLIC_READ	Public read and private write. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, metadata, and object versions in the bucket. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_WRITE	Public read and write. If this permission is set for a bucket, everyone can obtain the object list in the bucket, multipart uploads in the bucket, metadata of the bucket; upload objects; delete objects; initialize multipart uploads; upload parts; combine parts; copy parts; and abort multipart uploads. If this permission is set for an object, everyone can obtain the content and metadata of the object.
OBS_CANNED_ACL_PUBLIC_READ_DELIVERED	Public read on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart tasks, and bucket metadata, and can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.
OBS_CANNED_ACL_PUBLIC_READ_WRITE_DELIVERED	Public read and write on a bucket and its objects. If this permission is granted on a bucket, anyone can read the object list, multipart uploads, and bucket metadata, and can upload or delete objects, initiate multipart upload tasks, upload parts, assemble parts, copy parts, and abort multipart uploads. They can also read the content and metadata of the objects in the bucket. This permission cannot be granted on objects.

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Value	Description
OBS_CANNED_ACL_BUCKET_OWNER_FULL_CONTROL	If this permission is granted on an object, only the bucket and object owners have the full control over the object. By default, if you upload an object to a bucket of any other user, the bucket owner does not have the permissions on your object. After you grant this permission to the bucket owner, the bucket owner can have full control over your object. For example, if user A uploads object **x** to user B's bucket, user B does not have the control over object **x**. If user A sets **bucket-owner-full-control** for object **x**, user B then has the control over object **x**.

Table 10-234 obs_get_conditions

Parameter	Type	Mandatory (Yes/No)	Description
start_byte	uint64_t	No	**Explanation:** Start position for object download. **Restrictions**: None **Value range**: 0 (included) to the object length minus 1 (not included), in bytes **Default value**: 0 (indicating that the download starts from the first byte of the object)
byte_count	uint64_t	No	**Explanation:** Specifies the length to be downloaded. **Restrictions**: • Value: an integer greater than 0 • If the sum of *start_byte* and *byte_count* is greater than the object length minus 1, the object length minus 1 is used. The unit is byte. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
download_limit	uint64_t	No	**Explanation:** Bandwidth limit for single connection requests. **Restrictions**: None **Value range**: **819200** to **838860800**, in bit/s **Default value**: None
if_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None
if_not_modified_since	int64_t	No	**Explanation:** The request succeeds if the object has not been modified since the specified time; otherwise, an error is returned. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
if_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is the same as the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
if_not_match_etag	char *	No	**Explanation:** Preset ETag. If the ETag of the object to be downloaded or copied is different from the preset ETag, the request succeeds. Otherwise, an error is returned. **Restrictions**: None **Value range**: The value must contain 32 characters. **Default value**: None
image_process_config	**image_process_configure** *	No	**Explanation:** Image processing parameters. **Restrictions**: None

Table 10-235 metadata_action_indicator

Value	Description
OBS_NO_METADATA_ACTION	Default invalid value.
OBS_REPLACE	Uses the complete header carried in the current request to replace the original one and deletes the metadata that is not specified.

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Value	Description
OBS_REPLACE_NEW	The metadata that has an existing value is replaced. A value is assigned to the metadata that does not have a value. The metadata that is not specified remains unchanged. Custom metadata is replaced.

Table 10-236 obs_upload_file_server_callback

Parameter	Type	Mandatory (Yes/No)	Description
callback_url	char *	Yes	**Explanation:** After an object is uploaded successfully, OBS sends a callback request to the URL using the POST method. You can specify a maximum of 10 URLs. Use semicolons (;) to separate URLs. URL-encoding is required. **Restrictions**: None **Value range**: None **Default value**: None
callback_host	char *	No	**Explanation:** Value of the host header in the callback request. If this parameter is not specified, the value of host parsed from the **callbackUrl** parameter is used. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_body_type	char *	No	**Explanation:** Value of the **Content-Type** header in the callback request. **application/x-www-form-urlencoded** and **application/json** are supported. If this parameter is not specified, the default value is as follows: **application/json** **Restrictions**: None **Value range**: None **Default value**: None

Table 10-237 image_process_configure

Parameter	Type	Mandatory (Yes/No)	Description
image_process_mode	image_process_mode_type	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: For details, see image_process_mode_type.
cmds_stylename	char *	No	**Explanation:** Image processing parameters. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-238 image_process_mode_type

Value	Description
obs_image_process_invalid_mode	Default invalid value.
obs_image_process_cmd	Image processing parameters start with **image**.
obs_image_process_style	Image processing parameters start with **style**.

Table 10-239 obs_delete_object_data_callback

Parameter	Type	Mandatory (Yes/No)	Description
contents_count	int	Yes	**Explanation:** Length of the buffer. **Restrictions**: None **Value range**: None **Default value**: None
contents	**obs_delete_objects** *	Yes	**Explanation:** Buffer for storing the data to be uploaded. The data to be uploaded is copied to this buffer. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 10-240 obs_delete_objects

Parameter	Type	Mandatory (Yes/No)	Description
key	constchar*	Yes	**Explanation:** Each object name in the deletion result. An object name is a complete path that does not contain the bucket name. For example, if the access path is **examplebucket.obs.ap-southeast-1.myhuaweicloud.com/folder/test.txt**, the object name is **folder/test.txt**. **Restrictions**: The name of each object in a bucket must be unique. **Value range**: The value can contain 1 to 1,024 characters. **Default value**: None
code	constchar*	No	**Explanation:** Error code of a deletion failure. **Restrictions**: None **Value range**: None **Default value**: None
message	constchar*	No	**Explanation:** Error message of a deletion failure. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
delete_marker	constchar*	No	**Explanation:** OBS returns **true** for this parameter in the response when a delete marker is created or deleted for a versioning-enabled bucket. **Restrictions**: None **Value range**: None **Default value**: None
delete_marker_version_id	constchar*	No	**Explanation:** Version ID of a delete marker to create or delete. OBS returns this element in the response when a delete marker is created or deleted for a versioning-enabled bucket. This element will be returned in either of the following cases: ● You send a delete request specifying an object's name without providing a version ID. In this case, OBS creates a delete marker and returns its version ID in the response. ● You send a delete request specifying both an object's name and its version ID, but this version ID points to a delete marker. In this case, OBS deletes the delete marker and returns its version ID in the response. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples

This example deletes multiple versions of an object using **batch_delete_objects**.

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```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
obs_status delete_objects_data_callback(int contentsCount,
    obs_delete_objects *delobjs,
    void *callbackData);
int main()
{
    // The following code shows how to delete multiple versions of an object using batch_delete_objects:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Information about the object versions to be deleted in a batch.
    obs_object_info objectinfo[100];
    objectinfo[0].key = "example_get_file_test_delete1";
    objectinfo[0].version_id = "G00111934EAA2CE900004016129AC991";
    objectinfo[1].key = "example_get_file_test_delete2";
    objectinfo[1].version_id = "G00111934EAA2CE900004016129AC992";
    obs_delete_object_info delobj;
    memset(&delobj, 0, sizeof(obs_delete_object_info));
    delobj.keys_number = 2;
    // Set the response callback function.
    obs_delete_object_handler handler =
    {
        {&response_properties_callback, &response_complete_callback},
        &delete_objects_data_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Delete object versions in a batch.
    batch_delete_objects(&options, objectinfo, &delobj, 0, &handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("test batch_delete_objects successfully. \n");
    }
    else
    {
        printf("test batch_delete_objects failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
obs_status delete_objects_data_callback(int contentsCount,
    obs_delete_objects *delobjs,
    void *callbackData)
{
    int i;
```

```
    for (i = 0; i < contentsCount; i++) {
        const obs_delete_objects*content = &(delobjs[i]);
        printf("delete object result:\nobject key:%s\nerror code:%s\nerror message:%s\ndelete marker:%s
\ndelete marker version_id:%s\n",
                content->key, content->code, content->message, content->delete_marker, content-
>delete_marker_version_id);
    }
    return OBS_STATUS_OK;
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
```

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```
}
void print_error_details(const obs_error_details *error) {
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void response_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    if (callback_data)
    {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    print_error_details(error);
}
```

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11 Lifecycle Management (SDK for C)

11.1 Overview (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

OBS allows you to set lifecycle rules for buckets to automatically transition the storage class of an object or delete expired objects, to effectively use storage features and optimize the storage space. You can set multiple lifecycle rules based on the prefix. A lifecycle rule contains:

- Rule ID, which uniquely identifies the rule
- Prefix of objects that are under the control of this rule
- Transition policy of an object of the latest version, which can be specified in either mode:
  a. How many days after the object is created
  b. Transition date
- Expiration time of an object of the latest version, which can be specified in either mode:
  a. How many days after the object is created
  b. Expiration date
- Transition time for a historical object version, which is specified in the following mode:
  – How many days after an object version becomes historical
- Expiration time of a historical object version, which can be specified in the following mode:
  – How many days after the object becomes historical
- Identifier specifying whether the setting is effective

For more information, see **Lifecycle Management**.

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NOTE

- An object will be automatically deleted by the OBS server once it expires.
- The time set in the transition policy of an object must be earlier than its expiration time, and the time set in the transition policy of a historical object version must be earlier than its expiration time.
- The expiration time and transition policy for a historical object version will take effect only after versioning is enabled for buckets.

11.2 Configuring Lifecycle Rules for a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can configure lifecycle rules to periodically delete objects or transition objects between storage classes. For more information, see **Lifecycle Management**.

This API configures lifecycle rules for a bucket.

Restrictions

- There is no limit on the number of lifecycle rules in a bucket, but the total size of XML descriptions of all lifecycle rules in a bucket cannot exceed 20 KB.
- A maximum of 20 lifecycle rules can be configured for a bucket.
- To configure a lifecycle rule for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutLifecycleConfiguration** in IAM or **PutLifecycleConfiguration** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- Expired objects will be permanently deleted and cannot be restored.
- Multi-AZ redundancy is not available for Archive storage. For this reason, buckets or objects with multi-AZ redundancy cannot be transitioned to the Archive storage class based on a lifecycle rule.
- The minimum storage duration is 30 days for Infrequent Access storage and 90 days for Archive storage. After an object is transitioned to the Archive storage class, if it stays in this storage class for less than 90 days, you still need to pay for a full 90 days.

Method

```
void set_bucket_lifecycle_configuration(const obs_options *options,
        obs_lifecycle_conf* bucket_lifecycle_conf, unsigned int blcc_number,
        obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 11-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
bucket_lifecycle_conf	**obs_lifecycle_conf***	Yes	**Explanation:** For details about the bucket lifecycle configuration, see the following table. **Restrictions**: None
blcc_number	unsigned int	Yes	**Explanation:** Number of array members in the array **bucket_lifecycle_conf**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 11-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: Standard storage class

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 11-4 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 11-5 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-6 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 11-7 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 11-8 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 11-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-11 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 11-12 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-13 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-14 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-15 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-16 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-17 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 11-18 obs_lifecycle_conf

Parameter	Type	Mandatory (Yes/No)	Description
date	const char *	Yes if there is no **days** and no **transition**, **noncurrent_version_days**, or **noncurrent_version_transition**	**Explanation:** Indicates the time when the object expiration rule of the latest version takes effect. **Restrictions**: The value must be compatible with the ISO 8601 format and must indicate 00:00 (UTC time). **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
days	const char *	Yes if there is no **date** and no **transition**, **noncurrent_version_days**, or **noncurrent_version_transition**	**Explanation:** Number of days (since the object creation) after which the expiration rule will take effect. **Restrictions**: This parameter is only available for the latest object version. **Value range**: None **Default value**: None
id	const char *	No	**Explanation:** ID of a rule. **Restrictions**: None **Value range**: The value is a string of a maximum of 255 characters. **Default value**: None
prefix	const char *	Yes	**Explanation:** Object name prefix. It identifies the objects the rule applies to. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
status	const char *	Yes	**Explanation:** Whether the rule is enabled **Restrictions**: None **Value range**: • Enabled • Disabled **Default value**: None
noncurrent_version_days	const char *	No	**Explanation:** The expiration time of objects' historical versions. If versioning is enabled or suspended for a bucket, you can set this parameter to delete historical versions of objects that match the lifecycle rule. **Restrictions**: This parameter is only available for historical object versions. **Value range**: None **Default value**: None
transition	**obs_lifecycle_transtion** *	Yes if there is no **date**, **days**, **noncurrent_version_transition**, or **noncurrent_version_days**	**Explanation:** Transition time and the object storage class after transition **Restrictions**: This parameter is only available for the latest object version. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
transition_num	unsigned int	Yes if **transition** is specified	**Explanation:** Number of array members in the transition array. **Restrictions**: None **Value range**: None **Default value**: None
noncurrent_version_transition	**obs_lifecycle_noncurrent_transtion***	Yes if there is no **date**, **days**, **transition**, or **noncurrent_version_days**	**Explanation:** Transition time of historical object versions and the object storage class after transition. **Restrictions**: None **Value range**: None **Default value**: None
noncurrent_version_transition_num	unsigned int	Yes if **noncurrent_version_transition** is specified	**Explanation:** Number of array members in the array **noncurrent_version_transition**. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-19 obs_lifecycle_transtion

Parameter	Type	Mandatory (Yes/No)	Description
date	const char *	Yes if the **obs_lifecycle_transtion.days** element is absent	**Explanation:** Indicates the time when the object expiration rule of the latest version takes effect. **Restrictions**: The value must be compatible with the ISO 8601 format and must indicate 00:00 (UTC time). **Value range**: None **Default value**: None
days	const char *	Yes if the **obs_lifecycle_transtion.date** element is absent	**Explanation:** Number of days (since the object creation) after which the expiration rule will take effect. **Restrictions**: This parameter is only available for the latest object version. **Value range**: None **Default value**: None
storage_class	**obs_storage_class**	Yes	**Explanation:** The storage class to which the latest object version will be changed **Restrictions**: None **Value range**: For details, see **obs_storage_class**.

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Table 11-20 obs_lifecycle_noncurrent_transtion

Parameter	Type	Mandatory (Yes/No)	Description
noncurrent_version_days	const char *	Yes	**Explanation:** Number of days an object is historical before the specified transition rule takes effect **Restrictions**: This parameter is only available for historical object versions. **Value range**: None **Default value**: None
storage_class	**obs_storage_class**	Yes	**Explanation:** The storage class to which historical versions will be changed **Restrictions**: None **Value range**: For details, see **obs_storage_class**.

Table 11-21 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 11-22 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-23 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-24 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-25 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-26 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-27 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Setting the Object Expiration Time

This example sets the expiration time for the latest and historical object versions.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to set the expiration time for the latest and historical object versions:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_lifecycle_conf bucket_lifecycle_conf;
    memset(&bucket_lifecycle_conf, 0, sizeof(obs_lifecycle_conf));
    //Lifecycle rule ID
    bucket_lifecycle_conf.id = "test1";
    // Specify the prefix as "test".
    bucket_lifecycle_conf.prefix = "test";
    // Specify that objects whose names contain the specified prefix will expire 10 days after creation.
    bucket_lifecycle_conf.days = "10";
    // Specify that objects whose names contain the specified prefix will expire 20 days after becoming
historical versions.
    bucket_lifecycle_conf.noncurrent_version_days = "20";
    // Enable the lifecycle rule.
    bucket_lifecycle_conf.status = "Enabled";
    obs_status  ret_status = OBS_STATUS_BUTT;
    set_bucket_lifecycle_configuration(&options, &bucket_lifecycle_conf, 1,
        &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set bucket lifecycle configuration success.\n");
    }
    else
    {
        printf("set bucket lifecycle configuration failed(%s).\n",
            obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
```

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```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
```

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```
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Configuring the Object Transition Policy

This example sets the transition policy for the latest and historical object versions.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to set the transition policy for the latest and historical object versions:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_lifecycle_conf bucket_lifecycle_conf;
    memset(&bucket_lifecycle_conf, 0, sizeof(obs_lifecycle_conf));
    //Lifecycle rule ID
    bucket_lifecycle_conf.id = "test3";
    // Specify the prefix as "test".
    bucket_lifecycle_conf.prefix = "bcd";
    // Enable the lifecycle rule.
```

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```
    bucket_lifecycle_conf.status = "Enabled";
    // Specify that objects whose names contain the specified prefix will expire 30 days after creation.
    bucket_lifecycle_conf.days = "30";
    obs_lifecycle_transtion transition;
    memset(&transition, 0, sizeof(obs_lifecycle_transtion));
    // Specify that objects whose names contain the specified prefix will be transitioned 10 days after
creation.
    transition.days = "10";
    // Specify the storage class of the object after transition.
    transition.storage_class = OBS_STORAGE_CLASS_STANDARD_IA;
    bucket_lifecycle_conf.transition = &transition;
    bucket_lifecycle_conf.transition_num = 1;
    obs_lifecycle_noncurrent_transtion noncurrent_transition;
    memset(&noncurrent_transition, 0, sizeof(obs_lifecycle_noncurrent_transtion));
    // Specify that object versions whose names contain the specified prefix will be transitioned 30 days after
becoming historical versions.
    noncurrent_transition.noncurrent_version_days = "30";
    // Specify the storage class of object versions whose names contain the specified prefix after transition.
    noncurrent_transition.storage_class = OBS_STORAGE_CLASS_STANDARD_IA;
    bucket_lifecycle_conf.noncurrent_version_transition = &noncurrent_transition;
    bucket_lifecycle_conf.noncurrent_version_transition_num = 1;
    obs_status  ret_status = OBS_STATUS_BUTT;
    set_bucket_lifecycle_configuration(&options, &bucket_lifecycle_conf, 1,
        &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set bucket lifecycle configuration success.\n");
    }
    else
    {
        printf("set bucket lifecycle configuration failed(%s).\n",
            obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
```

```
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Configuring Bucket Lifecycle Rules**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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11.3 Obtaining the Lifecycle Rules of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can configure lifecycle rules to periodically delete objects or transition objects between storage classes. For more information, see **Lifecycle Management**.

This API returns the lifecycle rules of a bucket.

Restrictions

- To obtain the lifecycle configuration of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetLifecycleConfiguration** in IAM or **GetLifecycleConfiguration** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_lifecycle_configuration(const obs_options *options,
                obs_lifecycle_handler *handler, void *callback_data);
```

Request Parameters

Table 11-28 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	**obs_lifecycle_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-29 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 11-30 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 11-31 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 11-32 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-33 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 11-34 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 11-35 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 11-36 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-37 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-38 obs_lifecycle_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_lifecycle_callback	**get_lifecycle_configuration_callback** *	Yes	**Explanation:** Pointer to the callback function. The details of the bucket lifecycle rule can be recorded in callback_data (custom callback data). **Restrictions**: None

Table 11-39 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 11-40 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-41 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-42 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value:** None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-43 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-44 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-45 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Table 11-46 get_lifecycle_configuration_callback

Parameter	Type	Mandatory (Yes/No)	Description
bucket_lifecycle_conf	**obs_lifecycle_conf** *	Yes	**Explanation:** Content of the bucket lifecycle rule. **Restrictions**: None
blcc_number	unsigned int	Yes	**Explanation:** The number specified in **bucket_lifecycle_conf** **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-47 obs_lifecycle_conf

Parameter	Type	Mandatory (Yes/No)	Description
date	const char *	Yes if there is no **days** and no **transition**, **noncurrent_version_days**, or **noncurrent_version_transition**	**Explanation:** Indicates the time when the object expiration rule of the latest version takes effect. **Restrictions**: The value must be compatible with the ISO 8601 format and must indicate 00:00 (UTC time). **Value range**: None **Default value**: None
days	const char *	Yes if there is no **date** and no **transition**, **noncurrent_version_days**, or **noncurrent_version_transition**	**Explanation:** Number of days (since the object creation) after which the expiration rule will take effect. **Restrictions**: This parameter is only available for the latest object version. **Value range**: None **Default value**: None
id	const char *	No	**Explanation:** ID of a rule. **Restrictions**: None **Value range**: The value is a string of a maximum of 255 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
prefix	const char *	Yes	**Explanation:** Object name prefix. It identifies the objects the rule applies to. **Restrictions**: None **Value range**: None **Default value**: None
status	const char *	Yes	**Explanation:** Whether the rule is enabled **Restrictions**: None **Value range**: • Enabled • Disabled **Default value**: None
noncurrent_version_days	const char *	No	**Explanation:** Container for the expiration time of objects' historical versions. If versioning is enabled or suspended for a bucket, you can set this parameter to delete historical versions of objects that match the lifecycle rule. **Restrictions**: This parameter is only available for historical object versions. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
transition	**obs_lifecycle_transtion** *	Yes if there is no **date**, **days**, **noncurrent_version_transition**, or **noncurrent_version_days**	**Explanation:** Transition time and the object storage class after transition **Restrictions**: This parameter is only available for the latest object version.
transition_num	unsigned int	Yes if **transition** is specified	**Explanation:** Number of array members in the transition array. **Restrictions**: None **Value range**: None **Default value**: None
noncurrent_version_transition	**obs_lifecycle_noncurrent_transtion***	Yes if there is no **date**, **days**, **transition**, or **noncurrent_version_days**	**Explanation:** Transition time of historical object versions and the object storage class after transition. **Restrictions**: None
noncurrent_version_transition_num	unsigned int	Yes if **noncurrent_version_transition** is specified	**Explanation:** Number of array members in the array **noncurrent_version_transition**. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-48 obs_lifecycle_transtion

Parameter	Type	Mandatory (Yes/No)	Description
date	const char *	Yes if the **obs_lifecycle_transtion.days** element is absent	**Explanation:** Indicates the time when the object expiration rule of the latest version takes effect. **Restrictions**: The value must be compatible with the ISO 8601 format and must indicate 00:00 (UTC time). **Value range**: None **Default value**: None
days	const char *	Yes if the **obs_lifecycle_transtion.date** element is absent	**Explanation:** Number of days (since the object creation) after which the expiration rule will take effect. **Restrictions**: This parameter is only available for the latest object version. **Value range**: None **Default value**: None
storage_class	**obs_storage_class**	Yes	**Explanation:** The storage class to which the latest object version will be changed **Restrictions**: None **Value range**: For details, see **obs_storage_class**.

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Table 11-49 obs_lifecycle_noncurrent_transtion

Parameter	Type	Mandatory (Yes/No)	Description
noncurrent_version_days	const char *	Yes	**Explanation:** Number of days an object is historical before the specified transition rule takes effect **Restrictions**: This parameter is only available for historical object versions. **Value range**: None **Default value**: None
storage_class	**obs_storage_class**	Yes	**Explanation:** The storage class to which historical versions will be changed **Restrictions**: None **Value range**: For details, see **obs_storage_class**.

Code Examples: Obtaining the Lifecycle Configuration of a Bucket

This example obtains the lifecycle rules of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status getBucketLifecycleConfigurationCallbackEx(obs_lifecycle_conf* bucketLifeCycleConf,
    unsigned int blccNumber,
    void *callback_data);
int main()
{
    // The following code shows how to obtain the lifecycle rules of a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
```

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```
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback, &response_complete_callback };
    // Set the callback function.
    obs_lifecycle_handler lifeCycleHandlerEx =
    {
        response_handler,
        &getBucketLifecycleConfigurationCallbackEx
    };
    obs_status  ret_status = OBS_STATUS_BUTT;
    get_bucket_lifecycle_configuration(&options, &lifeCycleHandlerEx, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("get_lifecycle_config success.\n");
    }
    else
    {
        printf("get_lifecycle_config failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
```

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```
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
obs_status getBucketLifecycleConfigurationCallbackEx(obs_lifecycle_conf* bucketLifeCycleConf,
    unsigned int blccNumber,
    void *callback_data)
{
    unsigned int i = 0;
#define print_nonull(name, field)                           \
    do {                                                    \
        if (field && field[0]) {                            \
            printf("%s: %s\n", name, field);          \
        }                                                   \
    } while (0)
    for (i = 0; i < blccNumber; i++)
```

```
    {
        printf("----------------------------------------------\n");
        print_nonull("id", bucketLifeCycleConf[i].id);
        print_nonull("prefix", bucketLifeCycleConf[i].prefix);
        print_nonull("status", bucketLifeCycleConf[i].status);
        print_nonull("days", bucketLifeCycleConf[i].days);
        print_nonull("date", bucketLifeCycleConf[i].date);
    }
    printf("----------------------------------------------\n");
    return OBS_STATUS_OK;
}
```

11.4 Deleting the Lifecycle Rules of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can configure lifecycle rules to periodically delete objects or transition objects between storage classes. For more information, see **Lifecycle Management**.

This API deletes the lifecycle rules of a bucket.

Restrictions

- To delete the lifecycle configuration of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutLifecycleConfiguration** in IAM or **PutLifecycleConfiguration** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void delete_bucket_lifecycle_configuration(const obs_options *options,
        obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 11-50 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-51 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 11-52 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 11-53 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 11-54 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-55 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 11-56 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 11-57 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 11-58 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-59 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 11-60 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 11-61 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-62 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-63 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-64 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-65 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 11-66 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Deleting the Lifecycle Configuration of a Bucket

This example deletes the lifecycle rules of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status getBucketLifecycleConfigurationCallbackEx(obs_lifecycle_conf* bucketLifeCycleConf,
    unsigned int blccNumber,
    void *callback_data);
int main()
{
    // The following code shows how to delete the lifecycle rules of a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
```

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```
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status  ret_status = OBS_STATUS_BUTT;
    delete_bucket_lifecycle_configuration(&options, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("test_delete_lifecycle_config success.\n");
    }
    else
    {
        printf("test_delete_lifecycle_config failed(%s).\n",
            obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                  \
        if (properties-> field) {                             \
            printf("%s: %s\n", name, properties->field);          \
        }                                                 \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
```

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```
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Deleting Lifecycle Rules**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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12 Cross-Origin Resource Sharing (SDK for C)

12.1 Configuring CORS for a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Cross-origin resource sharing (CORS) is a mechanism defined by the World Wide Web Consortium (W3C) that allows a web application program in one domain to access resources located in another one. For normal web page requests, website scripts and contents in one domain cannot interact with those in another because of Same Origin Policies (SOPs). OBS supports CORS rules that allow the resources in OBS to be requested by other domains.

This API configures CORS for a bucket.

Restrictions

- To configure CORS for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketCORS** in IAM or **PutBucketCORS** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void set_bucket_cors_configuration(const obs_options *options, obs_bucket_cors_conf *obs_cors_conf_info,
        unsigned int conf_num, obs_response_handler *handler, void *callback_data);
```

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Request Parameters

Table 12-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
obs_cors_conf_info	**obs_bucket_cors_conf** *	Yes	**Explanation:** CORS rule content. **Restrictions**: None
conf_num	unsigned int	Yes	**Explanation:** Number of array members in the array **obs_cors_conf_info**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 12-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 12-4 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 12-5 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 12-6 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 12-7 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 12-8 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-11 obs_bucket_cors_conf

Parameter	Type	Mandatory (Yes/No)	Description
id	const char *	No	**Explanation:** The ID of a CORS rule. **Restrictions**: None **Value range**: A string of 1 to 255 characters. **Default value**: None
allowed_method	const char **	Yes	**Explanation**: The allowed HTTP methods (types of operations on buckets and objects) for a cross-origin request. **Restrictions**: None **Value range**: The following HTTP methods are supported: • GET • PUT • HEAD • POST • DELETE **Default value**: None
allowed_method_number	unsigned int	No	**Explanation**: Number of the **allowed_method** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allowed_origin	const char **	No	**Explanation:** The origin that is allowed to access the bucket. **Restrictions**: Only English domain names are supported. Regular expressions are used to match. Each rule allows at most one asterisk (*). For example, **https://*.vbs.example.com**. **Value range**: The value must comply with the CORS protocol and contain 0 to 20480 characters. **Default value**: None
allowed_origin_number	unsigned int	No	**Explanation**: Number of the **allowed_origin** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allowed_header	const char **	No	**Explanation:** The allowed headers for **Access-Control-Request-Headers** in a CORS configuration request. If a CORS request contains **Access-Control-Request-Headers**, this request is considered valid only when it matches the configuration of **allowed_header**. The matching is based on regular expressions. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value must comply with the CORS protocol and contain 0 to 20480 characters. **Default value**: None
allowed_header_number	unsigned int	No	**Explanation**: Number of the **allowed_header** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_age_seconds	const char *	No	**Explanation:** How long the response can be cached on a client. **Restrictions**: Each CORS rule can contain at most one **max_age_seconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000
expose_header	const char **	No	**Explanation:** It specifies additional headers a CORS rule allows in a response, which can be used to provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
expose_header_number	unsigned int	No	**Explanation**: Number of the **expose_header** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-12 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 12-13 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-14 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-15 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-16 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-17 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-18 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Configuring CORS for a Bucket

This example configures CORS for a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to set CORS rules for a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
```

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```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    char *id_1 = "1";
    // Specify the browser's cache time for the returned results of OPTIONS requests for specific resources, in
seconds.
    char *max_age_seconds = "100";
    // Specify the allowed CORS request methods (GET/PUT/DELETE/POST/HEAD).
    const char* allowedMethod_1[5] = { "GET","PUT","HEAD","POST","DELETE" };
    // Specify the allowed origins of cross-origin requests.
    const char* allowedOrigin_1[2] = { "obs.example.com", "www.example.com" };
    // Specify the headers that can be accessed by users from the application.
    const char* allowedHeader_1[2] = { "header-1", "header-2" };
    // Additional headers in the response
    const char* exposeHeader_1[2] = { "hello", "world" };
    obs_bucket_cors_conf bucketCorsConf;
    memset(&bucketCorsConf, 0, sizeof(obs_bucket_cors_conf));
    bucketCorsConf.id = id_1;
    bucketCorsConf.max_age_seconds = max_age_seconds;
    bucketCorsConf.allowed_method = allowedMethod_1;
    bucketCorsConf.allowed_method_number = 5;
    bucketCorsConf.allowed_origin = allowedOrigin_1;
    bucketCorsConf.allowed_origin_number = 2;
    bucketCorsConf.allowed_header = allowedHeader_1;
    bucketCorsConf.allowed_header_number = 2;
    bucketCorsConf.expose_header = exposeHeader_1;
    bucketCorsConf.expose_header_number = 2;
    set_bucket_cors_configuration(&options, &bucketCorsConf, 1, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set_bucket_cors success.\n");
    }
    else {
        printf("set_bucket_cors failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
```

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```
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

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NOTE

allowed_origin, **allowed_method**, and **allowed_header** can contain at most one wildcard (*). Wildcard characters (*) indicate that all origins, operations, or headers are allowed.

Helpful Links

- **Configuring Bucket CORS**
- **(GitHub) Sample Code**
- **OBS Error Codes**

12.2 Obtaining the CORS Configuration of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

Cross-origin resource sharing (CORS) is a mechanism defined by the World Wide Web Consortium (W3C) that allows a web application program in one domain to access resources located in another one. For normal web page requests, website scripts and contents in one domain cannot interact with those in another because of Same Origin Policies (SOPs). OBS supports CORS, allowing the resources in OBS to be requested across origins.

This API returns the CORS configuration of a bucket.

Restrictions

- To obtain the CORS configuration of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketCORS** in IAM or **GetBucketCORS** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_cors_configuration(const obs_options *options, obs_cors_handler *handler,
        void *callback_data);
```

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Request Parameters

Table 12-19 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_cors_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-20 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 12-21 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 12-22 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 12-23 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-24 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 12-25 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 12-26 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 12-27 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-28 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-29 obs_cors_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_cors_callback	**get_cors_configuration_callback** *	Yes	**Explanation:** The callback function pointer tag. The CORS rule content in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 12-30 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 12-31 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties** *	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-32 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-33 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-34 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-35 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-36 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 12-37 get_cors_configuration_callback

Parameter	Type	Mandatory (Yes/No)	Description
bucket_cors_conf	**obs_bucket_cors_conf** *	Yes	**Explanation:** CORS rule content. **Restrictions**: None
bcc_number	unsigned int	Yes	**Explanation:** The number specified in **bucket_cors_conf** **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-38 obs_bucket_cors_conf

Parameter	Type	Mandatory (Yes/No)	Description
id	const char *	No	**Explanation:** The ID of a CORS rule. **Restrictions**: None **Value range**: A string of 1 to 255 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allowed_method	const char **	Yes	**Explanation**: The allowed HTTP methods (types of operations on buckets and objects) for a cross-origin request. **Restrictions**: None **Value range**: The following HTTP methods are supported: ● GET ● PUT ● HEAD ● POST ● DELETE **Default value**: None
allowed_method_number	unsigned int	No	**Explanation**: Number of the **allowed_method** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allowed_origin	const char **	No	**Explanation:** The origin that is allowed to access the bucket. **Restrictions**: Only English domain names are supported. Regular expressions are used to match. Each rule allows at most one asterisk (*). For example, **https://*.vbs.example.com**. **Value range**: The value must comply with the CORS protocol and contain 0 to 20480 characters. **Default value**: None
allowed_origin_number	unsigned int	No	**Explanation**: Number of the **allowed_origin** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allowed_header	const char **	No	**Explanation:** The allowed headers for **Access-Control-Request-Headers** in a CORS configuration request. If a CORS request contains **Access-Control-Request-Headers**, this request is considered valid only when it matches the configuration of **allowed_header**. The matching is based on regular expressions. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value must comply with the CORS protocol and contain 0 to 20480 characters. **Default value**: None
allowed_header_number	unsigned int	No	**Explanation**: Number of the **allowed_header** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_age_seconds	const char *	No	**Explanation:** How long the response can be cached on a client. **Restrictions**: Each CORS rule can contain at most one **max_age_seconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000
expose_header	const char **	No	**Explanation:** It specifies additional headers a CORS rule allows in a response, which can be used to provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
expose_header_number	unsigned int	No	**Explanation**: Number of the **expose_header** elements. **Restrictions**: None **Value range**: None **Default value**: None

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Code Examples: Obtaining the CORS Configuration of a Bucket

This example obtains the CORS rules of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status get_cors_info_callback(obs_bucket_cors_conf* bucket_cors_conf,
    unsigned int bcc_number,
    void *callback_data);
int main()
{
    // The following code shows how to obtain CORS rules of a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Set the callback function.
    obs_cors_handler cors_handler_info =
    {
        response_handler,
        &get_cors_info_callback
    };
    get_bucket_cors_configuration(&options, &cors_handler_info, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("get_cors_config success.\n");
    }
    else {
        printf("get_cors_config failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
```

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```
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
```

```
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
obs_status get_cors_info_callback(obs_bucket_cors_conf* bucket_cors_conf,
    unsigned int bcc_number,
    void *callback_data)
{
    unsigned int i = 0;
    for (i = 0; i < bcc_number; ++i)
    {
        printf("-----------------------------------------------------\n");
        printf("id = %s\nmaxAgeSeconds = %s\n", bucket_cors_conf[i].id,
bucket_cors_conf[i].max_age_seconds);
        unsigned int j;
        for (j = 0; j < bucket_cors_conf[i].allowed_method_number; j++)
        {
            printf("allowedMethodes = %s\n", bucket_cors_conf[i].allowed_method[j]);
        }
        for (j = 0; j < bucket_cors_conf[i].allowed_origin_number; j++)
        {
            printf("allowedOrigines = %s\n", bucket_cors_conf[i].allowed_origin[j]);
        }
        for (j = 0; j < bucket_cors_conf[i].allowed_header_number; j++)
        {
            printf("allowedHeaderes = %s\n", bucket_cors_conf[i].allowed_header[j]);
        }
        for (j = 0; j < bucket_cors_conf[i].expose_header_number; j++)
        {
            printf("exposeHeaderes = %s\n", bucket_cors_conf[i].expose_header[j]);
        }
    }
    printf("-----------------------------------------------------\n");
    return OBS_STATUS_OK;
}
```

Helpful Links

- **Obtaining the CORS Configuration of a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**

12.3 Deleting the CORS Configuration of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

Cross-origin resource sharing (CORS) is a mechanism defined by the World Wide Web Consortium (W3C) that allows a web application program in one domain to access resources located in another one. For normal web page requests, website scripts and contents in one domain cannot interact with those in another because of Same Origin Policies (SOPs). OBS supports CORS rules that allow the resources in OBS to be requested by other domains.

This API deletes the CORS rules of a bucket.

Restrictions

- To delete the CORS configuration of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketCORS** in IAM or **PutBucketCORS** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void delete_bucket_cors_configuration(const obs_options *options,
        obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 12-39 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-40 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 12-41 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false
protocol	**obs_protocol**	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	**obs_storage_class**	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 12-42 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 12-43 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-44 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 12-45 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 12-46 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 12-47 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-48 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-49 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 12-50 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-51 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 12-52 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: ● 3.0: bucket of the latest version ● --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-53 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-54 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 12-55 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Deleting the CORS Configuration of a Bucket

This example deletes the CORS rules of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status get_cors_info_callback(obs_bucket_cors_conf* bucket_cors_conf,
    unsigned int bcc_number,
    void *callback_data);
int main()
{
    // The following code shows how to delete the CORS rules of a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    delete_bucket_cors_configuration(&options, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("delete_cors_config success.\n");
    }
    else
    {
        printf("delete_cors_config failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
```

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```
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
```

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```
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                    error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Deleting the CORS Configuration of a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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13 Logging (SDK for C)

13.1 Configuring Logging for a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API enables logging for a bucket (source) and configures another bucket (target) to store the log files. When a bucket is created, logging is not enabled by default. You can call this API to enable logging for the bucket. With logging enabled, a log message is generated for each operation on the bucket. Multiple log messages are packed into a file. The target bucket for storing log files must be specified when logging is enabled. It can be the bucket logging is enabled for, or any other bucket you have access to. If you specify another bucket for storing logs, the bucket must be in the same region as the logged bucket. You can also specify access permissions and name prefixes for log files.

Restrictions

- OBS creates log files and uploads them to the bucket. Before enabling logging for a bucket, you need to create an IAM agency to delegate OBS to upload log files to the specified bucket. For details about how to create an agency, see **Cloud Service Delegation**.
- To configure logging for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketLogging** in IAM or **PutBucketLogging** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

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Method

```
void set_bucket_logging_configuration_obs(const obs_options *options, char *target_bucket,
    char *target_prefix, char *agency, obs_acl_group *acl_group,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 13-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
target_bucket	char *	Yes	**Explanation:** When enabling the logging function, the owner of the bucket being logged can specify a target bucket to store the generated log files. Log files generated for multiple buckets can be stored in the same target bucket. If you do so, you need to specify different **target_prefix** to classify logs for different buckets. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
target_prefix	char *	Yes	**Explanation:** You can specify a prefix using this element so that log files are named with this prefix. **Restrictions**: None **Value range**: None **Default value**: None
agency	char *	Yes only when you enable the logging function	**Explanation:** Name of the agency created by the owner of the logging bucket for uploading log files by OBS. **Restrictions**: None **Value range**: None **Default value**: None
acl_group	**obs_acl_group** *	No	**Explanation:** Structure of the permission information group **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 13-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 13-4 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 13-5 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 13-6 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 13-7 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 13-8 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 13-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 13-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 13-11 obs_acl_group

Parameter	Type	Mandatory (Yes/No)	Description
acl_grant_count	int	No	**Explanation**: Number of elements in the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
acl_grants	**obs_acl_grant** *	No	**Explanation**: Permission information structure. **Restrictions**: None

Table 13-12 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
permission	obs_permission	Yes	**Explanation:** Bucket ACL **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	obs_bucket_delivered	Yes	**Explanation:** Whether the bucket ACL is applied to the objects in the bucket **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: **BUCKET_DELIVERED_FALSE** (The ACL of the bucket does not apply to its objects.)

Table 13-13 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

Table 13-14 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.

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Value	Description
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

Table 13-15 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

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Table 13-16 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback***	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 13-17 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-18 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	obs_status	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const obs_error_details*	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-19 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-20 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-21 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-22 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Enabling Bucket Logging

This example enables bucket logging.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to enable bucket logging:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
```

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```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Name of the IAM agency for OBS created by the target bucket owner
    char *agency = "storageSDK";
    //Specify the name of the target bucket for storing logs.
    char * bucket_name_target = "example-dest-bucket-name";
    // Configure logging for the bucket.
    set_bucket_logging_configuration_obs(&options, bucket_name_target, "prefix-log", agency,
        NULL, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set bucket (%s) logging successfully. \n", bucketName);
    }
    else
    {
        printf("set bucket logging failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
```

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```
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Granting Permissions on Log Objects

This example sets permissions for log objects.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to set permissions for log objects:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
```

```
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    int aclGrantCount = 2;
    obs_acl_grant acl_grants[2] = { 0 };
    // Grant full permissions on log files to the authorized users.
    acl_grants[0].grantee_type = OBS_GRANTEE_TYPE_CANONICAL_USER;
    strcpy(acl_grants[0].grantee.canonical_user.id, "userid1");
    strcpy(acl_grants[0].grantee.canonical_user.display_name, "dis1");
    acl_grants[0].permission = OBS_PERMISSION_READ;
    // Grant the read permission on log objects to all users.
    acl_grants[1].grantee_type = OBS_GRANTEE_TYPE_ALL_OBS_USERS;
    acl_grants[1].permission = OBS_PERMISSION_READ;
    obs_acl_group acl_group;
    acl_group.acl_grants = acl_grants;
    acl_group.acl_grant_count = aclGrantCount;
    // Name of the IAM agency for OBS created by the target bucket owner
    char *agency = "storageSDK";
    //Specify the name of the target bucket for storing logs.
    char * bucket_name_target = "example-dest-bucket-name";
    // Configure logging for the bucket.
    // Set the prefix of the log files, that is, the name of the folder where the log files are stored. If the prefix
is not set, the log files are stored in the root directory of the target bucket by default.
    set_bucket_logging_configuration_obs(&options, bucket_name_target, "prefix-log", agency,
        &acl_group, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("set bucket(%s) logging successfully. \n", bucketName);
    }
    else
    {
        printf("set bucket logging failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
```

```
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
```

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```
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                    error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Disabling Bucket Logging

This example disables bucket logging.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to disable bucket logging:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    char * agency = NULL;
    char * bucket_name_target = NULL;
    // Configure logging for the bucket.
    set_bucket_logging_configuration_obs(&options, bucket_name_target, NULL, agency,
        NULL, &response_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("close bucket(%s) logging successfully. \n", bucketName);
    }
    else
    {
        printf("close bucket logging failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
```

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```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
```

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```
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Configuring Logging for a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**

13.2 Obtaining the Logging Configuration of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API returns the logging configuration of a bucket.

Restrictions

- To obtain the logging configuration of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketLogging** in IAM or **GetBucketLogging** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

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Method

```
void get_bucket_logging_configuration(const obs_options *options, obs_response_handler *handler,
    bucket_logging_message *logging_message_data, void *callback_data);
```

Request Parameters

Table 13-23 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
logging_message_data	**bucket_logging_message** *	Yes	**Explanation:** Logging configuration of the current bucket. **Restrictions**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-24 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 13-25 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false
protocol	**obs_protocol**	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	**obs_storage_class**	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

Table 13-26 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

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Table 13-27 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 13-28 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 13-29 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 13-30 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 13-31 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 13-32 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 13-33 bucket_logging_message

Parameter	Type	Mandatory (Yes/No)	Description
target_bucket	char *	No	**Explanation**: When enabling the logging function, the owner of the bucket being logged can specify a target bucket to store the generated log files. Log files generated for multiple buckets can be stored in the same target bucket. If you do so, you need to specify different **target_prefix** to classify logs for different buckets. **Restrictions**: None **Value range**: None **Default value**: None
target_bucket_size	int	No	**Explanation**: Number of elements in the target_bucket array. **Restrictions**: None **Value range**: None **Default value**: None
target_prefix	char *	No	**Explanation**: You can specify a prefix using this element so that log files are named with this prefix. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
target_prefix_size	int	No	**Explanation**: Number of elements in the target_prefix array. **Restrictions**: None **Value range**: None **Default value**: None
acl_grants	**obs_acl_grant** *	No	**Explanation**: Permission information structure. **Restrictions**: None
acl_grant_count	int	No	**Explanation**: Number of elements in the acl_grants array. **Restrictions**: None **Value range**: None **Default value**: None
agency	char *	No	**Explanation**: Name of the agency created by the owner of the logging bucket for uploading log files by OBS. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
agency_size	int	No	**Explanation**: Number of elements in the agency array. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-34 obs_acl_grant

Parameter	Type	Mandatory (Yes/No)	Description
grantee_type	**obs_grantee_type**	Yes	**Explanation:** Description of the authorized user type **Restrictions**: None **Value range**: For details, see **obs_grantee_type**.
grantee.canonical_user.id	char[]	No	**Explanation:** User ID of the authorized user. **Restrictions**: None **Value range**: For details about how to obtain the ID of an authorized user, see **How Do I Get My Account ID and User ID?**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
permission	obs_permission	Yes	**Explanation:** Bucket ACL **Restrictions**: None **Value range**: For details, see **obs_permission**.
bucket_delivered	obs_bucket_delivered	Yes	**Explanation:** Whether the bucket ACL is applied to the objects in the bucket. **Restrictions**: None **Value range**: For details, see **obs_bucket_delivered**. **Default value**: **BUCKET_DELIVERED_FALSE** (The ACL of the bucket does not apply to its objects.)

Table 13-35 obs_grantee_type

Value	Description
OBS_GRANTEE_TYPE_CANONICAL_USER	An OBS user. Bucket or object permissions can be granted to any user who has an OBS account. Authorized users can use the AK and SK to access OBS.
OBS_GRANTEE_TYPE_ALL_USERS	All users can access buckets or objects, including anonymous users.

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Table 13-36 obs_permission

Value	Description
OBS_PERMISSION_READ	Read permission. A grantee with this permission for a bucket can obtain the list of objects in and metadata of the bucket. A grantee with this permission for an object can obtain the object content and metadata.
OBS_PERMISSION_WRITE	Write permission. A grantee with this permission for a bucket can upload, overwrite, and delete any object in the bucket. This permission is not available for objects.
OBS_PERMISSION_READ_ACP	ACP read permission. A grantee with this permission can obtain the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default.
OBS_PERMISSION_WRITE_ACP	ACP write permission. A grantee with this permission can update the ACL of a bucket or object. A bucket or object owner has this permission for their bucket or object ACL by default. This permission allows the grantee to change the access control policies, meaning the grantee has full control over a bucket or object.
OBS_PERMISSION_FULL_CONTROL	Full control permission. A grantee with this permission for a bucket has **READ**, **WRITE**, **READ_ACP**, and **WRITE_ACP** permissions for the bucket. A grantee with this permission for an object has **READ**, **READ_ACP**, and **WRITE_ACP** permissions for the object.

Table 13-37 obs_bucket_delivered

Value	Description
BUCKET_DELIVERED_FALSE	A bucket ACL is not applied to the objects in the bucket.
BUCKET_DELIVERED_TRUE	A bucket ACL is applied to the objects in the bucket.

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Table 13-38 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 13-39 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-40 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-41 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-42 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-43 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 13-44 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Obtaining the Logging Configuration of a Bucket

This example obtains the bucket logging configuration.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
void init_bucket_get_logging_message(bucket_logging_message *logging_message);
void print_grant_info(int acl_grant_count, obs_acl_grant *acl_grants);
void destroy_logging_message(bucket_logging_message *logging_message);
int main()
{
    // The following code shows how to view the bucket logging configuration:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Initialize the logging configuration structure.
    bucket_logging_message logging_message;
    init_bucket_get_logging_message(&logging_message);
    // Obtain the bucket logging configuration.
    get_bucket_logging_configuration(&options, &response_handler, &logging_message, &ret_status);
    if (OBS_STATUS_OK == ret_status)
    {
        if (logging_message.target_bucket)
        {
            printf("Target_Bucket: %s\n", logging_message.target_bucket);
            if (logging_message.target_prefix)
            {
                printf("Target_Prefix: %s\n", logging_message.target_prefix);
            }
            if (logging_message.agency && logging_message.agency[0] != '\0')
            {
                printf("Agency: %s\n", logging_message.agency);
            }
            // Print the ACL configuration.
            print_grant_info(*logging_message.acl_grant_count, logging_message.acl_grants);
        }
        else
        {
            printf("Service logging is not enabled for this bucket.\n");
        }
```

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```
    }
    else
    {
        printf("Get bucket logging failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Destroy the logging configuration structure.
    destroy_logging_message(&logging_message);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("Error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("Error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
```

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```
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    } else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                   error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void init_bucket_get_logging_message(bucket_logging_message *logging_message)
{
    memset(logging_message, 0, sizeof(bucket_logging_message));
    logging_message->target_bucket = (char *)malloc(sizeof(char)*OBS_MAX_HOSTNAME_SIZE);
    memset(logging_message->target_bucket, 0, OBS_MAX_HOSTNAME_SIZE);
    logging_message->target_bucket_size = OBS_MAX_HOSTNAME_SIZE;
    logging_message->target_prefix = (char *)malloc(sizeof(char)*OBS_MAX_KEY_SIZE);
    memset(logging_message->target_prefix, 0, OBS_MAX_KEY_SIZE);
    logging_message->target_prefix_size = OBS_MAX_KEY_SIZE;

    logging_message->agency = (char *)malloc(sizeof(char)*OBS_MAX_KEY_SIZE);
    memset(logging_message->agency, 0, OBS_MAX_KEY_SIZE);
    logging_message->agency_size = OBS_MAX_KEY_SIZE;
    logging_message->acl_grants =
(obs_acl_grant*)malloc(sizeof(obs_acl_grant)*OBS_MAX_ACL_GRANT_COUNT);
    memset(logging_message->acl_grants, 0, sizeof(obs_acl_grant)*OBS_MAX_ACL_GRANT_COUNT);
    logging_message->acl_grant_count = (int *)malloc(sizeof(int));
    *(logging_message->acl_grant_count) = 0;
}
void destroy_logging_message(bucket_logging_message *logging_message)
{
    free(logging_message->target_bucket);
    free(logging_message->target_prefix);
    free(logging_message->acl_grants);
    free(logging_message->agency);
    free(logging_message->acl_grant_count);
}
void print_grant_info(int acl_grant_count, obs_acl_grant *acl_grants)
{
    int i;
    for (i = 0; i < acl_grant_count; i++)
    {
        obs_acl_grant *grant = acl_grants + i;
```

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```
        const char *type;
        char composedId[OBS_MAX_GRANTEE_USER_ID_SIZE +
            OBS_MAX_GRANTEE_DISPLAY_NAME_SIZE + 16] = { 0 };
        const char *id;
        switch (grant->grantee_type) {
        case OBS_GRANTEE_TYPE_CANONICAL_USER:
            type = "UserID";
            snprintf(composedId, sizeof(composedId),
                "%s (%s)", grant->grantee.canonical_user.id,
                grant->grantee.canonical_user.display_name);
            id = composedId;
            break;
        case OBS_GRANTEE_TYPE_ALL_OBS_USERS:
            type = "Group";
            id = "Authenticated Users";
            break;
        default:
            type = "Group";
            id = "All Users";
            break;
        }
        const char *perm;
        switch (grant->permission) {
        case OBS_PERMISSION_READ:
            perm = "READ";
            break;
        case OBS_PERMISSION_WRITE:
            perm = "WRITE";
            break;
        case OBS_PERMISSION_READ_ACP:
            perm = "READ_ACP";
            break;
        case OBS_PERMISSION_WRITE_ACP:
            perm = "WRITE_ACP";
            break;
        default:
            perm = "FULL_CONTROL";
            break;
        }
        printf("%-6s  %-90s  %-12s\n", type, id, perm);
    }
}
```

Helpful Links

- **Obtaining the Bucket Logging Configuration**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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14 Static Website Hosting (SDK for C)

14.1 Hosting Website Files in a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

You can perform the following to implement website file hosting:

Step 1 Upload a website file to your bucket in OBS as an object and set the MIME type for the object.

Step 2 Set the object ACL to public read.

Step 3 Access the object using a browser.

----End

Code Examples: Website File Hosting

This example implements website file hosting.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
```

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```
{
    // The following code shows how to implement website file hosting:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_put_file_html_test.html";
    // Uploaded file
    char file_name[256] = "./example_local_file_test.html";
    // Set the MIME type.
    put_properties.content_type = "text/html";
    // Set the object ACL to public read.
    put_properties.canned_acl = OBS_CANNED_ACL_PUBLIC_READ;
    put_properties.content_disposition_filename = "";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    put_object(&options, key, content_length, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    if (data.infile != NULL) {
        fclose(data.infile);
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
```

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```
    if (callback_data != NULL)
    {
        obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
        printf("server_callback buf is %s, len is %llu",
            data->buffer, data->buffer_len);
        return OBS_STATUS_OK;
    }
    else {
        printf("error! obs_sever_callback_data is null!");
        return OBS_STATUS_OK;
    }
}
// Print the response.
#define print_nonnull(name, field)                              \
do {                                                            \
    if (properties-> field) {                                   \
        printf("%s: %s\n", name, properties->field);            \
    }                                                           \
} while (0)
print_nonnull("request_id", request_id);
print_nonnull("request_id2", request_id2);
print_nonnull("content_type", content_type);
if (properties->content_length) {
    printf("content_length: %llu\n", properties->content_length);
}
print_nonnull("server", server);
print_nonnull("ETag", etag);
print_nonnull("expiration", expiration);
print_nonnull("website_redirect_location", website_redirect_location);
print_nonnull("version_id", version_id);
print_nonnull("allow_origin", allow_origin);
print_nonnull("allow_headers", allow_headers);
print_nonnull("max_age", max_age);
print_nonnull("allow_methods", allow_methods);
print_nonnull("expose_headers", expose_headers);
print_nonnull("storage_class", storage_class);
print_nonnull("server_side_encryption", server_side_encryption);
print_nonnull("kms_key_id", kms_key_id);
print_nonnull("customer_algorithm", customer_algorithm);
print_nonnull("customer_key_md5", customer_key_md5);
print_nonnull("bucket_location", bucket_location);
print_nonnull("obs_version", obs_version);
print_nonnull("restore", restore);
print_nonnull("obs_object_type", obs_object_type);
print_nonnull("obs_next_append_position", obs_next_append_position);
print_nonnull("obs_head_epid", obs_head_epid);
print_nonnull("reserved_indicator", reserved_indicator);
int i;
for (i = 0; i < properties->meta_data_count; i++) {
    printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
        properties->meta_data[i].value);
}
return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
```

```
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

14.2 Configuring Static Website Hosting for a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can host static website resources such as HTML web pages, flash files, or audio and video files in an OBS bucket, so that you can provide these hosted resources using the bucket's website endpoint to end users. Typical use cases include:

- Redirecting all requests to another website
- Redirecting specific requests

This API configures static website hosting for a bucket.

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Restrictions

- Periods (.) should be avoided in the target bucket name, or there may be certificate verification failures on the client when using HTTPS for access.
- The request body of the website configuration cannot exceed 10 KB.
- To configure static website hosting for a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketWebsite** in IAM or **PutBucketWebsite** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void set_bucket_website_configuration(const obs_options *options,
    obs_set_bucket_redirect_all_conf *set_bucket_redirect_all,
    obs_set_bucket_website_conf *set_bucket_website_conf,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 14-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
set_bucket_redirect_all	**obs_set_bucket_redirect_all_conf** *	Yes	**Explanation:** Indicates the redirection configuration. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
set_bucket_redirect_all->host_name	const char *	Yes	**Explanation:** Indicates the name of the host where requests will be redirected. **Restrictions**: None **Value range**: None **Default value**: None
set_bucket_redirect_all->protocol	const char *	No	**Explanation:** Indicates the protocol used for redirecting requests. **Restrictions**: None **Value range**: • http • https **Default value**: http
set_bucket_website_conf	**obs_set_bucket_website_conf** *	Yes	**Explanation:** The configuration of the **website** element in the redirection rules. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
set_bucket_website_conf->suffix	const char *	Yes	**Explanation:** The suffix that is appended to the requested directory. For example, if the suffix is **index.html** and **samplebucket/images/** is requested, the data that is returned will be the content under the object name **images/index.html** in the **samplebucket** bucket. **Restrictions**: The suffix cannot be empty or contain slashes (/). **Value range**: None **Default value**: None
set_bucket_website_conf->key	const char *	No	**Explanation:** Indicates the object name that is used when a 4*XX* error occurs. This element identifies the page that is returned when an error occurs. **Restrictions**: None **Value range**: None **Default value**: None
set_bucket_website_conf->routingrule_info	**bucket_website_routingrule** *	No	**Explanation:** Description of the redirection rule. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
set_bucket_website_conf->routingrule_count	int	No	**Explanation:** Total size of **set_bucket_website_conf.routingrule_info** **Restrictions**: None **Value range**: None **Default value**: None
handler	**obs_response_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 14-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false
protocol	**obs_protocol**	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	obs_bucket_type	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_list_type	obs_bucket_list_type	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

Table 14-4 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 14-5 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 14-6 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 14-7 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 14-8 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**) (char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-11 obs_set_bucket_redirect_all_conf

Parameter	Type	Mandatory (Yes/No)	Description
host_name	const char *	Yes	**Explanation**: Indicates the name of the host where requests will be redirected. **Restrictions**: None **Value range**: None **Default value**: None
protocol	const char *	Yes	**Explanation**: Indicates the protocol used for redirecting requests. **Restrictions**: None **Value range**: • http • https **Default value**: http

Table 14-12 obs_set_bucket_website_conf

Parameter	Type	Mandatory (Yes/No)	Description
suffix	const char *	Yes	**Explanation**: The suffix element is appended to the requested directory. **Restrictions**: The suffix cannot be empty or contain slashes (/). **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
key	constchar*	No	**Explanation**: Indicates the object name that is used when a *4XX* error occurs. This element identifies the page that is returned when an error occurs. **Restrictions**: None **Value range**: None **Default value**: None
routingrule_info	**bucket_website_routingrule** *	No	**Explanation**: Elements of the redirection rule. **Restrictions**: None
routingrule_count	int	Yes	**Explanation**: Number of routingrule_info records. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-13 bucket_website_routingrule

Parameter	Type	Mandatory (Yes/No)	Description
key_prefix_equals	const char *	Yes	**Explanation**: Indicates the object name prefix which the redirection applies to. For example, to redirect the requests for the object **ExamplePage.html**, set **key_prefix_equals** to **ExamplePage.html**. **Restrictions**: None **Value range**: None **Default value**: None
http_errorcode_returned_equals	const char *	Yes	**Explanation**: The HTTP error code for redirection to take effect. If an error code returned is the same as the value specified for this parameter, the redirection rule takes effect. Examples: If you want to redirect requests to **NotFound.html** when an HTTP error code 404 is returned, set **http_errorcode_returned_equals** to **404** and **replace_key_with** to **NotFound.html**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	const char *	Yes	**Explanation**: Indicates the protocol (**http** or **https**) used for redirecting requests. **Restrictions**: None **Value range**: None **Default value**: None
host_name	const char *	Yes	**Explanation**: Indicates the name of the host where requests will be redirected. **Restrictions**: None **Value range**: None **Default value**: None
replace_key_prefix_with	const char *	Yes	**Explanation**: The object name prefix used in the redirection. OBS replaces the value of **key_prefix_equals** with the value of **replace_key_prefix_with**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
replace_key_with	const char *	Yes	**Explanation**: The object name prefix used in the redirection. OBS replaces the entire object name in the request with the value of **replace_key_with**. **Restrictions**: None **Value range**: None **Default value**: None
http_redirect_code	const char *	Yes	**Explanation**: Indicates the HTTP status code returned for the redirection request. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-14 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 14-15 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-16 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-17 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in a request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-18 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	obs_name_value*	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-19 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-20 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Configuring the Default Page, Error Page, and Redirection Rules

This example configures the default page, error page, and redirection rules.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to configure hosting for a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    obs_set_bucket_website_conf set_bucket_website_conf;
    // Configure the default page.
    set_bucket_website_conf.suffix = "index.html";
    // Configure the error page.
    set_bucket_website_conf.key = "Error.html";
    // Define redirection rules.
    set_bucket_website_conf.routingrule_count = 2;
    bucket_website_routingrule temp[2];
    memset(&temp[0], 0, sizeof(bucket_website_routingrule));
    memset(&temp[1], 0, sizeof(bucket_website_routingrule));
    set_bucket_website_conf.routingrule_info = temp;
    temp[0].key_prefix_equals = "key_prefix1";
    temp[0].replace_key_prefix_with = "replace_key_prefix1";
    temp[0].http_errorcode_returned_equals = "404";
    temp[0].http_redirect_code = NULL;
    temp[0].host_name = "www.example.com";
    temp[0].protocol = "http";
    temp[1].key_prefix_equals = "key_prefix2";
    temp[1].replace_key_prefix_with = "replace_key_prefix2";
    temp[1].http_errorcode_returned_equals = "404";
    temp[1].http_redirect_code = NULL;
    temp[1].host_name = "www.example.com";
    temp[1].protocol = "http";
    // Set the redirection rules.
    set_bucket_website_configuration(&options, NULL, &set_bucket_website_conf,
        &response_handler, &ret_status);
    // Check whether the request is successful.
```

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```
    if (ret_status == OBS_STATUS_OK) {
        printf("create bucket %s successfully. \n", bucketName);
    }
    else {
        printf("create bucket %s failed(%s).\n", bucketName, obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                           \
            printf("%s: %s\n", name, properties->field);        \
        }                                                   \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
```

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```
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Code Examples: Configuring Redirection for All Requests

This example configures redirection for all requests.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to configure redirection for all requests:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
```

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```
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Set redirection for all requests.
    obs_set_bucket_redirect_all_conf set_bucket_redirect_all;
    set_bucket_redirect_all.host_name = "www.example.com";
    set_bucket_redirect_all.protocol = "https";
    set_bucket_website_configuration(&options, &set_bucket_redirect_all, NULL,
        &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set bucket redirect all successfully. \n");
    }
    else
    {
        printf("set bucket redirect all failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
```

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```
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- Configuring Static Website Hosting for a Bucket
- (GitHub) Sample Code
- OBS Error Codes
- FAQ for Static Website Hosting

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14.3 Obtaining the Static Website Hosting Configuration of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

You can host static website resources such as HTML web pages, flash files, or audio and video files in an OBS bucket, so that you can provide these hosted resources using the bucket's website endpoint to end users. Typical use cases include:

- Redirecting all requests to another website
- Redirecting specific requests

This API returns the static website hosting configurations of the bucket.

Restrictions

- To obtain the static website hosting configurations of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketWebsite** in IAM or **GetBucketWebsite** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_website_configuration(const obs_options *options,
    obs_get_bucket_websiteconf_handler *handler, void *callback_data);
```

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Request Parameters

Table 14-21 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**.
handler	**obs_get_bucket_websiteconf_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**.
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-22 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None **Value range**: None **Default value**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-23 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 14-24 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 14-25 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)

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Parameter	Type	Mandatory (Yes/No)	Description
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-26 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 14-27 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

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Table 14-28 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 14-29 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-30 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-31 obs_get_bucket_websiteconf_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_bucket_website_conf_callback	**obs_get_bucket_websiteconf_callback** *	Yes	**Explanation:** The pointer to the callback function, where the callback parameters can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 14-32 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 14-33 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-34 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-35 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-36 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-37 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-38 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 14-39 obs_get_bucket_websiteconf_callback

Parameter	Type	Mandatory (Yes/No)	Description
hostname	const char *	Yes	**Explanation:** Indicates the name of the host where requests will be redirected. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	const char *	Yes	**Explanation:** The HTTP or HTTPS protocol used in redirecting requests. The default protocol is HTTP. **Restrictions**: None **Value range**: None **Default value**: None
suffix	const char *	Yes	**Explanation:** The suffix that is appended to the requested directory. For example, if the suffix is **index.html** and **samplebucket/images/** is requested, the data that is returned will be the content under the object name **images/index.html** in the **samplebucket** bucket. **Restrictions**: The suffix cannot be empty or contain slashes (/). **Value range**: None **Default value**: None
key	const char *	Yes	**Explanation:** Indicates the object name that is used when a 4*XX* error occurs. This element identifies the page that is returned when an error occurs. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
routingrule	const **bucket_website_routingrule** *	Yes	**Explanation:** Description of the redirection rule. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-40 bucket_website_routingrule

Parameter	Type	Mandatory (Yes/No)	Description
key_prefix_equals	const char *	Yes	**Explanation**: Indicates the object name prefix which the redirection applies to. For example, to redirect the requests for the object **ExamplePage.html**, set **key_prefix_equals** to **ExamplePage.html**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
http_errorcode_returned_equals	const char *	Yes	**Explanation**: The HTTP error code for redirection to take effect. If an error code returned is the same as the value specified for this parameter, the redirection rule takes effect. Examples: If you want to redirect requests to **NotFound.html** when an HTTP error code 404 is returned, set **http_errorcode_returned_equals** to **404** and **replace_key_with** to **NotFound.html**. **Restrictions**: None **Value range**: None **Default value**: None
protocol	const char *	Yes	**Explanation**: Indicates the protocol (**http** or **https**) used for redirecting requests. **Restrictions**: None **Value range**: None **Default value**: None
host_name	const char *	Yes	**Explanation**: Indicates the name of the host where requests will be redirected. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
replace_key_prefix_with	const char *	Yes	**Explanation**: The object name prefix used in the redirection. OBS replaces the value of **key_prefix_equals** with the value of **replace_key_prefix_with**. **Restrictions**: None **Value range**: None **Default value**: None
replace_key_with	const char *	Yes	**Explanation**: The object name prefix used in the redirection. OBS replaces the entire object name in the request with the value of **replace_key_with**. **Restrictions**: None **Value range**: None **Default value**: None
http_redirect_code	const char *	Yes	**Explanation**: Indicates the HTTP status code returned for the redirection request. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Obtaining the Website Hosting Configurations of a Bucket

This example obtains the website hosting configuration of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
```

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```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status get_bucket_websiteconf_callback(const char *hostname,
    const char *protocol,
    const char *suffix,
    const char *key,
    const bucket_website_routingrule *websiteconf,
    int webdatacount,
    void *callback_data);
int main()
{
    // The following code shows how to view the hosting configuration:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback, &response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Set the response callback function.
    obs_get_bucket_websiteconf_handler get_bucket_websiteconf_handler =
    {
        response_handler,
        &get_bucket_websiteconf_callback
    };
    // Obtain the hosting configuration.
    get_bucket_website_configuration(&options, &get_bucket_websiteconf_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("get bucket website successfully.\n");
    }
    else
    {
        printf("get bucket website failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
```

```
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
```

```
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
obs_status get_bucket_websiteconf_callback(const char *hostname,
    const char *protocol,
    const char *suffix,
    const char *key,
    const bucket_website_routingrule *websiteconf,
    int webdatacount,
    void *callback_data)
{
    (void)callback_data;
    int i = 0;
    printf("redirectAllRequestsTo hostname : %s\n", hostname);
    printf("redirectAllRequestsTo protocol : %s\n", protocol);
    printf("suffix : %s\n", suffix);
    printf("key : %s\n", key);
    for (i = 0; i < webdatacount; i++)
    {
        printf("key_prefix_equals : %s\n", websiteconf[i].key_prefix_equals);
        printf("http_errorcode_returned_equals : %s\n", websiteconf[i].http_errorcode_returned_equals);
        printf("replace_key_prefix_with : %s\n", websiteconf[i].replace_key_prefix_with);
        printf("replace_key_with : %s\n", websiteconf[i].replace_key_with);
        printf("http_redirect_code : %s\n", websiteconf[i].http_redirect_code);
        printf("hostname : %s\n", websiteconf[i].host_name);
        printf("protocol : %s\n", websiteconf[i].protocol);
    }
    return OBS_STATUS_OK;
}
```

Helpful Links

- **Obtaining the Static Website Hosting Configuration of a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Static Website Hosting**

14.4 Deleting the Static Website Hosting Configuration of a Bucket (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

You can host static website resources such as HTML web pages, flash files, or audio and video files in an OBS bucket, so that you can provide these hosted resources using the bucket's website endpoint to end users. Typical use cases include:

- Redirecting all requests to another website
- Redirecting specific requests

This API deletes the static website hosting configurations of a bucket.

Restrictions

- To delete the static website hosting configurations of a bucket, you must be the bucket owner or have the required permission (**obs:bucket:DeleteBucketWebsite** in IAM or **DeleteBucketWebsite** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void delete_bucket_website_configuration(const obs_options *options,
    obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 14-41 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-42 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	temp_auth_configure*	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 14-43 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_type	obs_bucket_type	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	obs_bucket_list_type	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

Table 14-44 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 14-45 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.

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Value	Description
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 14-46 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 14-47 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

Table 14-48 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000

Parameter	Type	Mandatory (Yes/No)	Description
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-49 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-50 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-51 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 14-52 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-53 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 14-54 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: ● GET ● PUT ● HEAD ● POST ● DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-55 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-56 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 14-57 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Deleting the Website Hosting Configurations of a Bucket

This example deletes the website hosting configuration of a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
int main()
{
    // The following code shows how to delete the hosting configuration:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
```

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```
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";

    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Delete the hosting configuration.
    delete_bucket_website_configuration(&options, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("delete bucket website successfully.\n");
    }
    else
    {
        printf("delete bucket website failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
```

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```
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Deleting the Static Website Hosting Configuration of a Bucket**
- **(GitHub) Sample Code**
- **OBS Error Codes**
- **FAQ for Static Website Hosting**

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15 Tagging (SDK for C)

15.1 Adding Bucket Tags (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

If you add tags to a bucket, SDRs generated for the requests sent to this bucket will include these tags, so you can use the tags to classify SDRs for detailed cost analysis. For example, if you have an application that uploads its running data to a bucket, you can tag the bucket with the application name. Then, you can analyze the cost of this application by using that tag.

This API adds tags to a bucket.

Restrictions

- A bucket can have a maximum of 10 tags.
- A tag key and its value can contain a maximum of 36 and 43 characters, respectively.
- Tag keys and values cannot contain commas (,), asterisks (*), vertical bars (|), slashes (/), less-than signs (<), greater-than signs (>), equal signs (=), backslashes (\), or ASCII codes (0x00 to 0x1F).
- To add tags to a bucket, you must be the bucket owner or have the required permission (**obs:bucket:PutBucketTagging** in IAM or **PutBucketTagging** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

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Method

```
void set_bucket_tagging(const obs_options *options,obs_name_value * tagging_list,
    unsigned int number, obs_response_handler *handler, void *callback_data);
```

Request Parameters

Table 15-1 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
tagging_list	**obs_name_value** *	Yes	**Explanation:** Tag list **Restrictions**: None
number	unsigned int	Yes	**Explanation:** Number of tags **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
handler	obs_response_handler *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-2 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	obs_bucket_context	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	obs_http_request_option	Yes	**Explanation:** Request-related settings. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 15-3 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false
protocol	**obs_protocol**	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	**obs_storage_class**	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

Table 15-4 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

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Table 15-5 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 15-6 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 15-7 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 15-8 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-9 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-10 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-11 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 15-12 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-13 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-14 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: ● The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. ● OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-15 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-16 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-17 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Code Examples: Adding Bucket Tags

This example sets bucket tags.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
#define TAG_LIST_LENGTH 10
int main()
{
    // The following code shows how to set bucket tags using set_bucket_tagging:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
```

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```
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Define bucket tags.
    char tagKey[][OBS_COMMON_LEN_256] = { {"k1"},{"k2"},{"k3"},{"k4"},{"k5"},{"k6"},{"k7"},{"k8"},{"k9"},
{"k10"} };
    char tagValue[][OBS_COMMON_LEN_256] = { {"v1"},{"v2"},{"v3"},{"v4"},{"v5"},{"v6"},{"v7"},{"v8"},{"v9"},
{"v10"} };
    obs_name_value tagginglist[TAG_LIST_LENGTH] = { 0 };
    int i = 0;
    for (; i < TAG_LIST_LENGTH; i++)
    {
        tagginglist[i].name = tagKey[i];
        tagginglist[i].value = tagValue[i];
    }
    // Set the bucket tags.
    set_bucket_tagging(&options, tagginglist, TAG_LIST_LENGTH, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("set bucket tagging successfully. \n");
    }
    else
    {
        printf("set bucket tagging failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                        \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);        \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
```

```
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

NOTE

- A bucket can have up to 10 tags.
- The name and value of a tag can contain Unicode characters.

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Helpful Links

- Configuring Tags for a Bucket
- (GitHub) Sample Code
- OBS Error Codes

15.2 Obtaining Bucket Tags (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

If you add tags to a bucket, SDRs generated for the requests sent to this bucket will include these tags, so you can use the tags to classify SDRs for detailed cost analysis. For example, if you have an application that uploads its running data to a bucket, you can tag the bucket with the application name. Then, you can analyze the cost of this application by using that tag.

This API returns the tags of a bucket.

Restrictions

- To obtain the bucket tags, you must be the bucket owner or have the required permission (**obs:bucket:GetBucketTagging** in IAM or **GetBucketTagging** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void get_bucket_tagging(const obs_options *options, obs_get_bucket_tagging_handler *handler,
    void *callback_data);
```

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Request Parameters

Table 15-18 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_get_bucket_tagging_handler** *	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None
callback_data	void *	No	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-19 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

Table 15-20 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: ● A bucket name must be unique across all accounts and regions. ● A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. ● If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 15-21 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 15-22 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 15-23 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 15-24 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 15-25 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-26 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-27 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-28 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	**obs_response_properties_callback** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	**obs_response_complete_callback** *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 15-29 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const **obs_response_properties***	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-30 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details***	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-31 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: ● WARM (Infrequent Access storage class) ● COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: ● kms (SSE-KMS encryption) ● obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-32 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None

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Parameter	Type	Description
resource	const char*	**Explanation:** Bucket or object related to the error. **Restrictions**: None **Value range**: None **Default value**: None
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None

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Parameter	Type	Description
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-33 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-34 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.

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Value	Description
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

Table 15-35 obs_get_bucket_tagging_handler

Parameter	Type	Mandatory (Yes/No)	Description
response_handler	**obs_response_handler** *	Yes	**Explanation:** Response callback function structure. **Restrictions**: None
get_bucket_tagging_callback	**obs_get_bucket_tagging_callback** *	Yes	**Explanation:** The callback function pointer tag. The content of **tagging_count** and **tagging_list** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

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Table 15-36 obs_get_bucket_tagging_callback

Parameter	Type	Mandatory (Yes/No)	Description
tagging_count	int	Yes	**Explanation:** Number of tags in the tag list. **Restrictions**: None **Value range**: [0,10] **Default value**: None
tagging_list	obs_name_value *	Yes	**Explanation:** The tag list **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Code Examples: Obtaining Bucket Tags

This example obtains the bucket tags.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
**callback_data** (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of **obs_status** and **obs_error_details** in the callback can
be recorded in **callback_data** (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
obs_status get_bucket_tagging_callback(int tagging_count, obs_name_value *tagging_list, void
*callback_data);
typedef struct tagkv
{
    char key[250];
    char value[250];
}tagkv;
typedef struct TaggingInfo
{
    int tagCount;
    tagkv taglist[10];
    obs_status ret_status;
```

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```
}TaggingInfo;
int main()
{
    // The following code shows how to use get_bucket_tagging to view bucket tags:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback, &response_complete_callback };
    // Set the response callback function.
    obs_get_bucket_tagging_handler get_bucket_tagging_handler =
    {
        response_handler,
        &get_bucket_tagging_callback
    };
    // Create callback data.
    TaggingInfo tagging_info;
    memset(&tagging_info, 0, sizeof(TaggingInfo));
    tagging_info.ret_status = OBS_STATUS_BUTT;
    // Obtain bucket tags.
    get_bucket_tagging(&options, &get_bucket_tagging_handler, &tagging_info);
    if (OBS_STATUS_OK == tagging_info.ret_status) {
        printf("get bucket tagging successfully.\n");
    }
    else
    {
        printf("get bucket tagging failed(%s).\n", obs_get_status_name(tagging_info.ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
void printTagInfo(TaggingInfo* infoToPrint)
{
    int i;
    printf("etag number is %d\n", infoToPrint->tagCount);
    for (i = 0; i < infoToPrint->tagCount; i++)
    {
        printf("key:[%s], value[%s]\n", infoToPrint->taglist[i].key, infoToPrint->taglist[i].value);
    }
}
obs_status get_bucket_tagging_callback(int tagging_count, obs_name_value *tagging_list, void *callback_data)
{
    int tag_num = 0;
    TaggingInfo * tag_info = (TaggingInfo *)callback_data;
    tag_info->tagCount = tagging_count;
    if (tagging_count > 0)
    {
        for (tag_num = 0; tag_num < tagging_count; tag_num++)
        {
            memcpy_s(tag_info->taglist[tag_num].key, sizeof(tag_info->taglist[tag_num].key),
```

```
(&tagging_list[tag_num])->name, strlen((&tagging_list[tag_num])->name) + 1);
            memcpy_s(tag_info->taglist[tag_num].value, sizeof(tag_info->taglist[tag_num].value),
(&tagging_list[tag_num])->value, strlen((&tagging_list[tag_num])->value) + 1);
        }
    }
    printTagInfo(tag_info);
    return OBS_STATUS_OK;
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);          \
        }                                                       \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
```

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```
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        TaggingInfo *taggingInfo = (TaggingInfo *)callback_data;
        taggingInfo->ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n    %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n    %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n    %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n     %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Obtaining Bucket Tags**
- **(GitHub) Sample Code**
- **OBS Error Codes**

15.3 Deleting Bucket Tags (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

If you add tags to a bucket, SDRs generated for the requests sent to this bucket will include these tags, so you can use the tags to classify SDRs for detailed cost analysis. For example, if you have an application that uploads its running data to a bucket, you can tag the bucket with the application name. Then, you can analyze the cost of this application by using that tag.

This API deletes the tags of a bucket.

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Restrictions

- To delete bucket tags, you must be the bucket owner or have the required permission (**obs:bucket:DeleteBucketTagging** in IAM or **DeleteBucketTagging** in a bucket policy). For details, see **Introduction to OBS Access Control**, **IAM Custom Policies**, and **Creating a Custom Bucket Policy**.
- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Method

```
void delete_bucket_tagging(const obs_options *options, obs_response_handler *handler,
    void *callback_data);
```

Request Parameters

Table 15-37 List of request parameters

Parameter	Type	Mandatory (Yes/No)	Description
options	const **obs_options***	Yes	**Explanation:** The context of the requested bucket. Refer to **Configuring option (SDK for C)** to set the AK, SK, endpoint, bucket, timeout, and temporary credentials through **obs_options**. **Restrictions**: None
handler	**obs_response_handler***	Yes	**Explanation:** A callback structure where all members are pointers to callback functions, used to set the callback functions that handle response data. You can set a callback function to copy the response data from the server to your custom **callback_data**. **Restrictions**: None

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Parameter	Type	Mandatory (Yes/No)	Description
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-38 obs_options

Parameter	Type	Mandatory (Yes/No)	Description
bucket_options	**obs_bucket_context**	Yes	**Explanation:** Bucket settings. **Restrictions**: None
request_options	**obs_http_request_option**	Yes	**Explanation:** Request-related settings. **Restrictions**: None
temp_auth	**temp_auth_configure***	No	**Explanation:** The structure used to calculate a temporary signature. Set it to **NULL** if it is not used. **Restrictions**: None

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Table 15-39 obs_bucket_context

Parameter	Type	Mandatory (Yes/No)	Description
host_name	char *	Yes	**Explanation:** The requested host name, used as an address for connecting to OBS. It is the domain name (the endpoint) of the server where the requested resource is stored. Example: host_name = "obs.ap-southeast-1.myhuaweicloud.com"; **Restrictions**: The value does not need to contain **http://** or **https://** as a prefix, which is controlled using **obs_protocol**. **Value range**: To view the endpoints available for OBS, see **Regions and Endpoints**. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_name	char *	Yes	**Explanation:** Bucket name. **Restrictions**: • A bucket name must be unique across all accounts and regions. • A bucket name: – Must be 3 to 63 characters long and start with a digit or letter. Lowercase letters, digits, hyphens (-), and periods (.) are allowed. – Cannot be formatted as an IP address. – Cannot start or end with a hyphen (-) or period (.). – Cannot contain two consecutive periods (..), for example, **my..bucket**. – Cannot contain a period (.) and a hyphen (-) adjacent to each other, for example, **my-.bucket** or **my.-bucket**. • If you repeatedly create buckets with the same name in the same region, no error will be reported and the bucket attributes comply with those set in the first creation request. **Value range**: None **Default value**: None
useCname	bool	No	**Explanation:** Whether to use a custom domain name to access OBS. **Restrictions**: None **Value range**: **true**: A custom domain name is used. **false**: A custom domain name is not used. **Default value**: false

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Parameter	Type	Mandatory (Yes/No)	Description
protocol	obs_protocol	No	**Explanation:** Whether to use the HTTP or HTTPS protocol. **Restrictions**: None **Value range**: For details, see **obs_protocol**. **Default value**: OBS_PROTOCOL_HTTPS (HTTPS is used by default.)
access_key	char *	Yes	**Explanation:** Access key ID (AK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
secret_access_key	char *	Yes	**Explanation:** Secret access key (SK). **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
storage_class	obs_storage_class	No	**Explanation:** Bucket storage class that can be specified at bucket creation. **Restrictions**: None **Value range**: For details, see **obs_storage_class**. **Default value**: OBS_STORAGE_CLASS_STANDARD (Standard storage class)

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Parameter	Type	Mandatory (Yes/No)	Description
token	char *	No	**Explanation:** The security token in temporary credentials. **Restrictions**: None **Value range**: For details, see **Creating Access Keys**. **Default value**: None
epid	char *	No	**Explanation:** Enterprise project ID that can be specified during bucket creation. If you have enabled EPS, you can obtain the project ID from the EPS console. **Restrictions**: The value needs to be represented as a UUID. This parameter is not required if EPS is not enabled. Example: **9892d768-2d13-450f-aac7-ed0e44c2585f** **Default value**: None
bucket_type	**obs_bucket_type**	No	**Explanation:** Whether a bucket is an object bucket or a parallel file system. **Restrictions**: None **Value range**: For details, see **obs_bucket_type**. **Default value**: OBS_BUCKET_OBJECT (object bucket)
bucket_list_type	**obs_bucket_list_type**	No	**Explanation:** Whether to list all buckets, object buckets, or parallel file systems. **Restrictions**: None **Value range**: For details, see **obs_bucket_list_type**.

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Table 15-40 obs_protocol

Value	Description
OBS_PROTOCOL_HTTPS	HTTPS is used for access.
OBS_PROTOCOL_HTTP	HTTP is used for access.

Table 15-41 obs_storage_class

Value	Description
OBS_STORAGE_CLASS_STANDARD	Standard storage class. This class features low access latency and high throughput and is used for storing massive, frequently accessed (multiple times a month) or small objects (< 1 MB) requiring quick response.
OBS_STORAGE_CLASS_STANDARD_IA	Infrequent Access storage class. Used for storing data that is semi-frequently accessed (fewer than 12 times a year) but becomes instantly available when needed.
OBS_STORAGE_CLASS_GLACIER	Archive storage class. Used for storing rarely accessed (once a year) data.

Table 15-42 obs_bucket_type

Value	Description
OBS_BUCKET_OBJECT	Object bucket
OBS_BUCKET_PFS	Parallel file system

Table 15-43 obs_bucket_list_type

Value	Description
OBS_BUCKET_LIST_ALL	Lists all buckets.
OBS_BUCKET_LIST_OBJECT	Lists all object buckets.
OBS_BUCKET_LIST_PFS	Lists all parallel file systems.

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Table 15-44 obs_http_request_option

Parameter	Type	Mandatory (Yes/No)	Description
connect_time	int	Yes	**Explanation:** Timeout period for establishing an HTTP/HTTPS connection, in ms. **Restrictions**: None **Value range**: [10000, 60000] **Default value**: 60000
max_connected_time	int	Yes	**Explanation:** Timeout period (in seconds) of a request. **Restrictions**: None **Value range**: None **Default value**: 0 (There is never automatic disconnection.)
proxy_auth	char*	No	**Explanation:** Proxy authentication information, in the format *username*:*password* **Restrictions**: None **Value range**: None **Default value**: None
proxy_host	char*	No	**Explanation:** IP address or host name of the proxy server. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-45 temp_auth_configure

Parameter	Type	Mandatory (Yes/No)	Description
expires	long long int	Yes	**Explanation:** Validity period of the temporary credentials, in seconds. **Restrictions**: None **Value range**: [0-630720000] **Default value**: None
temp_auth_callback	void(***temp_auth_callback**)(char *temp_auth_url, uint64_t temp_auth_url_len, char*temp_auth_headers, uint64_t temp_auth_headers_len, void*callback_data)	Yes	**Explanation:** The pointer to the custom callback function, which is used to record the temporary URL and involved signature header to the custom callback data. **Restrictions**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-46 temp_auth_callback

Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_url	char *	Yes	**Explanation:** Temporary URL. OBS allows you to construct a URL for a specific operation. In such a URL, you use Query parameters to provide authentication information including the user AK, signature, and validity period. Anyone who has the URL can perform the specified operation. After receiving a request made using such a URL, OBS treats the requester as the user who issued the URL and processes the request. For example, if you construct a pre-signed URL for downloading an object and provide it to various users, they can use the URL to download the object without authentication, but they must do so within the validity period specified by the **Expires** parameter. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_url_len	uint64_t	Yes	**Explanation:** Length of the temporary URL. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
temp_auth_headers	char *	Yes	**Explanation:** Headers for temporary authentication. **Restrictions**: None **Value range**: None **Default value**: None
temp_auth_headers_len	uint64_t	Yes	**Explanation:** Number of temporary authentication headers. **Restrictions**: None **Value range**: None **Default value**: None
callback_data	void *	Yes	**Explanation:** Custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-47 obs_response_handler

Parameter	Type	Mandatory (Yes/No)	Description
properties_callback	obs_response_properties_callback *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
complete_callback	obs_response_complete_callback *	Yes	**Explanation:** The pointer to the completion callback function. The content of **obs_status** and **obs_error_details** in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None

Table 15-48 obs_response_properties_callback

Parameter	Type	Mandatory (Yes/No)	Description
properties	const obs_response_properties*	Yes	**Explanation:** Parameters in the response headers. You are advised to record them to **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-49 obs_response_complete_callback

Parameter	Type	Mandatory (Yes/No)	Description
status	**obs_status**	Yes	**Explanation:** Internal request status code of the SDK. **Restrictions**: None **Value range**: For details, see **obs_status**.
error_details	const **obs_error_details** *	Yes	**Explanation:** The pointer to the response callback function. The content of properties in the callback can be recorded in **callback_data** (custom callback data). **Restrictions**: None
callback_data	void *	Yes	**Explanation:** The pointer to the custom callback data. **Restrictions**: None **Value range**: None **Default value**: None

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Table 15-50 obs_response_properties

Parameter	Type	Mandatory (Yes/No)	Description
request_id	const char *	No	**Explanation:** The value created by OBS to uniquely identify the request. OBS uses this value to locate the fault. **Restrictions**: None **Value range**: None **Default value**: None
request_id2	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None
content_type	const char *	No	**Explanation:** MIME type of the object. MIME type is a standard way of describing a data type and is used by the browser to decide how to display data. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
content_length	uint64_t	No	**Explanation:** The size (in bytes) of the response body. **Restrictions**: None **Value range**: None **Default value**: None
server	const char *	No	**Explanation:** Server header in an HTTP request. **Restrictions**: None **Value range**: None **Default value**: None
etag	const char *	No	**Explanation:** Base64-encoded, 128-bit MD5 value of an object. It uniquely identifies the content of an object and can be used to check the object integrity. For example, if the ETag is **A** when an object is uploaded and is **B** when the object is downloaded, it indicates that the object content has been changed. The ETag reflects changes to the contents of the object, not its metadata. An object created by an upload or copy operation has a unique ETag. **Restrictions**: If an object is encrypted using server-side encryption, the ETag is not the MD5 value of the object. **Value range**: The value must contain 32 characters. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
expiration	const char *	No	**Explanation:** Expiration details of the object. **Restrictions**: None **Value range**: An integer greater than 0, in days. **Default value**: None
website_redirect_location	const char *	No	**Explanation:** Indicates where an object request is redirected. If the bucket that contains the object is configured with Website settings, this parameter can be set in the object metadata so that the request for the object can be redirected to another object in the same bucket or an external URL after the website returns a 301 redirect response. To another object in the same bucket: x-obs-website-redirect-location:/anotherPage.html To an external URL: x-obs-website-redirect-location:http://www.example.com/ OBS obtains the specified value from the header and stores it in the object metadata **WebsiteRedirectLocation**. **Restrictions**: • The value must start with a slash (/), **http://**, or **https://** and cannot exceed 2 KB. • OBS only supports redirection of objects that are in the root directory. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
version_id	const char *	No	**Explanation:** Object version ID. **Restrictions**: If the object has no version ID, the value is **NULL**. **Value range**: The value must contain 32 characters. **Default value**: None
meta_data_count	int	No	**Explanation:** Number of elements in the meta_data array. **Restrictions**: None **Value range**: None **Default value**: None
meta_data	const **obs_name_value** *	No	**Explanation:** Custom metadata of the object. You can add custom metadata headers that start with **x-obs-meta-** for easy object management. When you retrieve or query the metadata of the object, the added custom metadata headers will be returned in the response. **Restrictions**: None
use_server_side_encryption	char	No	**Explanation:** If server-side encryption is enabled, this parameter is set to '\1'. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
allow_origin	const char *	No	**Explanation:** Returned if the request origin meets the CORS configured on the server. **Restrictions**: None **Value range**: The value that complies with the CORS **Default value**: None
allow_headers	const char *	No	**Explanation:** Returned if the request headers meet the CORS configured on the server. **Restrictions**: At most one asterisk (*) is allowed. Spaces, ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: The value that complies with the CORS **Default value**: None
max_age	const char *	No	**Explanation:** **MaxAgeSeconds** in the CORS rules of the bucket. It specifies the time your client can cache the response for a cross-origin request. **Restrictions**: Each CORS rule can contain at most one **MaxAgeSeconds**. **Value range**: An integer greater than or equal to 0, in seconds. **Default value**: 3000

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Parameter	Type	Mandatory (Yes/No)	Description
allow_methods	const char *	No	**Explanation:** Indicates that methods in the rule are included in the response if Access-Control-Request-Method in the request meets the CORS configuration requirements when CORS is configured for buckets. **Restrictions**: None **Value range**: • GET • PUT • HEAD • POST • DELETE **Value range**: None
expose_headers	const char *	No	**Explanation:** **ExposeHeader** in the CORS rules of the bucket. It specifies additional headers allowed in the response by a CORS rule. These headers provide extra information to clients. By default, a browser can access only headers **Content-Length** and **Content-Type**. If the browser needs to access other headers, you need to configure them as additional headers. **Restrictions**: Spaces, asterisks (*), ampersands (&), colons (:), less-than signs (<), and full-width characters are not allowed. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
storage_class	const char *	No	**Explanation:** Object storage class. **Restrictions**: This header is returned only when the storage class of an object is not Standard. **Value range**: • WARM (Infrequent Access storage class) • COLD (Archive storage class) **Default value**: None
server_side_encryption	const char *	No	**Explanation:** The encryption method used by the server. Example: **x-obs-server-side-encryption:kms** **Restrictions**: This header is included in a response if SSE-KMS is used. **Value range**: • kms (SSE-KMS encryption) • obs (SSE-OBS encryption) **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
kms_key_id	const char *	No	**Explanation**: Key ID. If the SSE-KMS encryption is used with a specified key, the key ID is required. **Restrictions**: This header can only be used when you specify **kms** for the **server_side_encryption** header. **Value range**: None **Default value**: If you specify **kms** for encryption but do not specify a key ID, the default master key will be used. If there is not a default master key, OBS will create one and use it.
customer_algorithm	const char *	No	**Explanation:** Indicates a decryption algorithm. This header is included in a response if SSE-C is used. **Restrictions**: None **Value range**: AES256 (AES256 decryption algorithm) **Default value**: None
customer_key_md5	const char *	No	**Explanation:** Indicates the MD5 value of a key used to decrypt objects. This header is included in a response if SSE-C is used. **Restrictions**: Base64-encoded MD5 value of the key, for example, **4XvB3tbNTN+tIEVa0/fGaQ==**. **Value range**: Base64-encoded MD5 value of the key ID. **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
bucket_location	const char *	No	**Explanation:** Indicates the region where the bucket resides. **Restrictions**: None **Value range**: None **Default value**: None
obs_version	const char *	No	**Explanation:** OBS version of the bucket. **Restrictions**: None **Value range**: • 3.0: bucket of the latest version • --: bucket of an earlier version **Default value**: None
restore	const char *	No	**Explanation:** Restoration status of an object. Examples: **ongoing-request="true"** (the object is being restored); **ongoing-request="false", expiry-date="Wed, 7 Nov 2012 00:00:00 GMT"** (the object has been restored) **expiry-date** indicates when the restored object will expire. **Restrictions**: For an Archive object that is being restored or has been restored, this header is returned. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
obs_object_type	const char *	No	**Explanation:** Type of the object. **Restrictions**: This header is returned only when the object is not a Normal object. **Value range**: Appendable **Default value**: None
obs_next_append_position	const char *	No	**Explanation:** Indicates the position to be provided for the next request. **Restrictions**: This header is returned only when the object is an Appendable object. **Value range**: None **Default value**: None
obs_head_epid	const char *	No	**Explanation:** Enterprise project ID for the current bucket. Users who have enabled the enterprise project function can obtain the ID from the enterprise project service. **Restrictions**: The value is a UUID. This parameter is not required if you have not enabled an enterprise project. **Value range**: None **Default value**: None

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Parameter	Type	Mandatory (Yes/No)	Description
reserved_indicator	const char *	No	**Explanation:** A special symbol that helps troubleshoot. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-51 obs_error_details

Parameter	Type	Description
message	const char*	**Explanation:** Error details in the XML error response body. **Restrictions**: None **Value range**: See **Error Codes**. **Default value**: None
resource	const char*	**Explanation:** Bucket resources related to the error. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
further_details	const char*	**Explanation:** The value of the **FurtherDetails** element in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details_count	int	**Explanation:** The number of other elements in the XML error response body. **Restrictions**: None **Value range**: None **Default value**: None
extra_details	**obs_name_value***	**Explanation:** Values of other elements in the XML error response body. **Restrictions**: None
error_headers_count	int	**Explanation:** Number of headers in **error_headers**. **Restrictions**: None **Value range**: None **Default value**: None

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Parameter	Type	Description
error_headers	char**	**Explanation:** All response headers that contain the error. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-52 obs_name_value

Parameter	Type	Mandatory (Yes/No)	Description
name	char *	No	**Explanation:** Key of a property. **Restrictions**: None **Value range**: None **Default value**: None
value	char *	No	**Explanation:** Property value. **Restrictions**: None **Value range**: None **Default value**: None

Table 15-53 obs_status

Value	Description
OBS_STATUS_OK	The request is successful.

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Value	Description
OBS_STATUS_InitCurlFailed	Failed to initialize **curl**.
OBS_STATUS_InternalError	Internal error.
OBS_STATUS_OutOfMemory	The local memory is insufficient.
OBS_STATUS_FailedToIInitializeRequest	Failed to initialize the request.
OBS_STATUS_ConnectionFailed	Network connection failed.
OBS_STATUS_XmlParseFailure	Failed to parse the XML file.
OBS_STATUS_NameLookupError	Domain name resolution failed.
OBS_STATUS_FailedToConnect	Failed to connect to the server.
OBS_STATUS_PartialFile	Network transmission.
OBS_STATUS_InvalidParameter	Invalid parameter.
OBS_STATUS_NoToken	The current number of concurrent tasks exceeds the maximum number (**1000** by default). Use the **set_online_request_max_count** function to adjust the maximum number of concurrent tasks.
OBS_STATUS_OpenFileFailed	Failed to open the file.
OBS_STATUS_AccessDenied	The request is rejected.
OBS_STATUS_MalformedPolicy	The format of the request policy is incorrect.
OBS_STATUS_MalformedXML	The XML request format is incorrect.
OBS_STATUS_MethodNotAllowed	The request method is not allowed.
OBS_STATUS_SignatureDoesNotMatch	The signatures do not match. Check whether the AK, SK, and token are correct.
OBS_STATUS_ServiceUnavailable	Server exception.
OBS_STATUS_SlowDown	The request frequency is too high.

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Code Examples: Deleting Bucket Tags

This example deletes bucket tags.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
#define TAG_LIST_LENGTH 10
int main()
{
    // The following code shows how to use delete_bucket_tagging to delete bucket tags:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    obs_response_handler response_handler = { &response_properties_callback,
&response_complete_callback };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Delete bucket tags.
    delete_bucket_tagging(&options, &response_handler, &ret_status);
    if (OBS_STATUS_OK == ret_status) {
        printf("delete bucket tagging successfully.\n");
    }
    else
    {
        printf("delete bucket tagging failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
```

```
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
```

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```
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
```

Helpful Links

- **Deleting Bucket Tags**
- **(GitHub) Sample Code**
- **OBS Error Codes**

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16 Other APIs (SDK for C)

16.1 Server-Side Encryption (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

Function

This API configures server-side encryption for objects, so that they will be encrypted or decrypted when you upload them to or download them from a bucket.

The encryption and decryption happen on the server side.

OBS supports the following two server-side encryption methods, which use the same industry-standard AES256 encryption algorithm but provide different ways to manage keys:

- SSE-KMS is based on the key provided by Key Management Service (KMS).
- SSE-C is based on the key and its MD5 value provided by the customer.

When server-side encryption is used, the returned ETag value is not the object's MD5 value. OBS will verify the object's MD5 value as long as the upload request includes the **Content-MD5** header, no matter whether server-side encryption is used or not.

For more information, see **Server-Side Encryption**.

Restrictions

- To use server-side encryption, you must have the **PutEncryptionConfiguration** permission. The bucket owner has this permission by default and can grant it to others. For details about authorization methods, see **Differences Between OBS Permissions Control**

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Methods. For details about how to configure permissions, see **OBS Custom Policies** and **Configuring an Object Policy**.

- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.

Supported APIs

The following table lists APIs related to server-side encryption:

API Method in OBS C SDK	Description	Supported Encryption Method
put_object	Sets the encryption algorithm and key during object upload to enable server-side encryption.	SSE-KMS SSE-C
get_object	Sets the decryption algorithm and key during object download to decrypt the object.	SSE-C
copy_object	1. Sets the decryption algorithm and key for decrypting the source object during object copy. 2. Sets the encryption algorithm and key during object copy to enable the encryption algorithm for the target object.	SSE-KMS SSE-C
get_object_metadata	Sets the decryption algorithm and key when obtaining the object metadata to decrypt the object.	SSE-C
initiate_multi_part_upload	Sets the encryption algorithm and key when initiating a multipart upload to enable server-side encryption for the final object generated.	SSE-KMS SSE-C
upload_part	Sets the encryption algorithm and key during multipart upload to enable server-side encryption for parts.	SSE-C
copy_part	1. Sets the decryption algorithm and key for decrypting the source object during object copy. 2. Sets the encryption algorithm and key during part copy to enable the encryption for the target part.	SSE-C

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Code Examples: Object Encryption and Upload

This example uses server-side encryption when uploading an object.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following code shows how to use server-side encryption when uploading an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // When server-side encryption is used, HTTPS must be used.
    options.bucket_options.protocol = OBS_PROTOCOL_HTTPS;
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_put_file_test";
    // Uploaded file
    char file_name[256] = "./example_local_file_test.txt";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    //Configure server-side encryption.
    server_side_encryption_params encryption_params;
    memset(&encryption_params, 0, sizeof(server_side_encryption_params));
```

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```
    encryption_params.ssec_customer_algorithm = "AES256";
    encryption_params.ssec_customer_key =
        "K7QkYpBkM5+hcs27fsNkUnNVaobncnLht/rCB2o/9Cw=";
    put_object(&options, key, content_length, &put_properties, &encryption_params, &putobjectHandler,
&data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    if (data.infile != NULL) {
        fclose(data.infile);
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
```

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```
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

Code Examples: Object Decryption and Download

This example uses the server-side decryption function when downloading an object.

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```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
int main()
{
    // The following code shows how to use server-side decryption when downloading an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    // When server-side encryption is used, HTTPS must be used.
    options.bucket_options.protocol = OBS_PROTOCOL_HTTPS;
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test";
    object_info.version_id = NULL;
    //Set the structure for storing the downloaded object data based on service requirements.
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    // Define parameters for range-based download.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    //Server-side encryption (SSE-C)
    server_side_encryption_params encryption_params;
    memset(&encryption_params, 0, sizeof(server_side_encryption_params));
    encryption_params.ssec_customer_algorithm = "AES256";
```

```
    encryption_params.ssec_customer_key =
        "K7QkYpBkM5+hcs27fsNkUnNVaobncnLht/rCB2o/9Cw=";
    get_object(&options, &object_info, &getcondition, &encryption_params, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
// Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
```

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```
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

Helpful Links

- **Server-Side Encryption**
- **(GitHub) Sample Code**
- **OBS Error Codes**

16.2 Using a Temporary URL for Authorized Access (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

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Function

This API creates a temporary URL to grant temporary permissions for operating OBS. This URL contains the information about the AK and SK, request method, and related parameters. You need to specify a validity period for the URL during the creation. To create such a URL, you need to use the **temp_auth_configure** structure.

The **temp_auth_configure** structure exists in the **obs_options** structure. This method is applicable to each C SDK API.

Parameter	Description	Structure in SDK
expires	Validity period of the generated temporary URL	obs_options. temp_auth_configure
temp_auth_callback	The callback function used to return the generated temporary URL	
callback_data	Callback data	

Restrictions

- The mapping between OBS regions and endpoints must comply with what is listed in **Regions and Endpoints**.
- If a CORS or signature mismatch error occurs, troubleshoot the issue as follows:
  a. If CORS is not configured, you need to configure CORS rules on OBS Console. For details, see **Configuring CORS**.
  b. If the signatures do not match, check whether signature parameters are missing or invalid. For details, see **Authentication of Signature in a URL**. For example, during an object upload, the backend uses **Content-Type** to calculate the signature and generate a temporary URL, but if **Content-Type** is not set or is set to an invalid value when the frontend uses that URL, a CORS error occurs. To resolve this issue, ensure **Content-Type** remains consistent at the frontend and backend.

Method

```
void (*temp_auth_callback)(char *temp_auth_url, uint64_t temp_auth_url_len, char *temp_auth_headers,
    uint64_t temp_auth_headers_len, void *callback_data);
```

To access OBS using a temporary URL generated by the OBS SDK for C, perform the following steps:

Step 1 Call any interface in the SDK to generate a temporary URL and headers based on the following code example.

Step 2 Use any HTTP library to make an HTTP/HTTPS request to OBS.

----End

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The following code examples use a temporary URL to create a bucket or upload, download, list, or delete objects.

Code Examples: Generating a Temporary URL for Creating a Bucket

This example generates a temporary URL for creating a bucket.

```
#include "eSDKOBS.h"
#include <stdio.h>
#define MAX_TEMP_URL_LEN 1024
#define MAX_HEADER_LEN 1024
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct __tempAuthResult
{
    char tmpAuthUrl[MAX_TEMP_URL_LEN];
    char actualHeaders[MAX_HEADER_LEN];
}tempAuthResult;
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData);
int main()
{
    // The following code shows how to generate a URL for creating a bucket:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    temp_auth_configure tempauth;
    tempAuthResult  ptrResult;
    memset(&ptrResult, 0, sizeof(tempAuthResult));
    //Callback data
    tempauth.callback_data = (void *)(&ptrResult);
    // Validity period
    tempauth.expires = 10;
    // The callback function returns the generated temporary URL.
    tempauth.temp_auth_callback = &tempAuthCallBack_getResult;
    options.temp_auth = &tempauth;
    // Assign values to the callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    // Call the interface.
    create_bucket(&options, OBS_CANNED_ACL_PRIVATE, NULL, &response_handler, &ret_status);
    // Check whether the request is successful.
```

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```
    if (ret_status == OBS_STATUS_OK) {
        printf("the temporary signature url of create bucket generated successfully. \n"
            "the temporary signature url is %s. \n"
            "the actualHeaders are %s. \n", ptrResult.tmpAuthUrl, ptrResult.actualHeaders);
    }
    else
    {
        printf(" the temporary signature url of create bucket generation failed(%s).\n",
obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
```

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```
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData)
{
    int urlLen = 0;
    tempAuthResult * ptrResult = (tempAuthResult *)callbackData;
    urlLen = strlen(tempAuthUrl);
    strcpy_s(ptrResult->tmpAuthUrl, MAX_TEMP_URL_LEN, tempAuthUrl);
    strcpy_s(ptrResult->actualHeaders, MAX_HEADER_LEN, tempAuthActualHeaders);
}
```

Code Examples: Generating a Temporary URL for Uploading an Object

This example generates a temporary URL for uploading an object.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct __tempAuthResult
{
    char tmpAuthUrl[1024];
    char actualHeaders[1024];
}tempAuthResult;
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
```

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```
    uint64_t tempAuthActualHeadersLen, void *callbackData);
int main()
{
    // The following code shows how to generate a URL for uploading an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    temp_auth_configure tempauth;
    tempAuthResult  ptrResult;
    memset(&ptrResult, 0, sizeof(tempAuthResult));
    //Callback data
    tempauth.callback_data = (void *)(&ptrResult);
    // Validity period
    tempauth.expires = 10;
    // The callback function returns the generated temporary URL.
    tempauth.temp_auth_callback = &tempAuthCallBack_getResult;
    options.temp_auth = &tempauth;
    // Assign values to the callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    char* key = "example-object-key";
    obs_put_object_handler putobjectHandler =
    {
        response_handler,
        NULL
    };
    // Initialize the put_properties structure.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Call the interface.
    put_object(&options, key, 0, &put_properties, 0, &putobjectHandler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("the temporary signature url of put object generated successfully. \n"
            "the temporary signature url is %s. \n"
            "the actualHeaders are %s. \n", ptrResult.tmpAuthUrl, ptrResult.actualHeaders);
    }
    else
    {
        printf(" the temporary signature url of put object generation failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
```

```
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
```

```
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData)
{
    int urlLen = 0;
    tempAuthResult * ptrResult = (tempAuthResult *)callbackData;
    urlLen = strlen(tempAuthUrl);
    strcpy_s(ptrResult->tmpAuthUrl, 1024, tempAuthUrl);
    strcpy_s(ptrResult->actualHeaders, 1024, tempAuthActualHeaders);
}
```

Code Examples: Generating a Temporary URL for Downloading an Object

This example generates a temporary URL for downloading an object.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct __tempAuthResult
{
    char tmpAuthUrl[1024];
    char actualHeaders[1024];
}tempAuthResult;
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData);
int main()
{
    // The following code shows how to generate a URL for downloading an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
```

```
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    temp_auth_configure tempauth;
    tempAuthResult  ptrResult;
    memset(&ptrResult, 0, sizeof(tempAuthResult));
    //Callback data
    tempauth.callback_data = (void *)(&ptrResult);
    // Validity period
    tempauth.expires = 10;
    // The callback function returns the generated temporary URL.
    tempauth.temp_auth_callback = &tempAuthCallBack_getResult;
    options.temp_auth = &tempauth;
    // Assign values to the callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    char* key = "example-object-key";
    char* versionid = NULL;
    // Downloaded object information
    obs_object_info object_info;
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = key;
    object_info.version_id = versionid;
    obs_get_object_handler getobjectHandler =
    {
        response_handler,
        NULL
    };
    // Initialize the put_properties structure.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Call the interface.
    get_object(&options, &object_info, 0, 0, &getobjectHandler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("the temporary signature url of get object generated successfully. \n"
            "the temporary signature url is %s. \n"
            "the actualHeaders are %s. \n", ptrResult.tmpAuthUrl, ptrResult.actualHeaders);
    }
    else
    {
        printf(" the temporary signature url of get object generation failed(%s).\n", obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
```

```
            data->buffer, data->buffer_len);
        return OBS_STATUS_OK;
    }
    else {
        printf("error! obs_sever_callback_data is null!");
        return OBS_STATUS_OK;
    }
}
// Print the response.
#define print_nonnull(name, field)                                \
do {                                                              \
    if (properties-> field) {                                     \
        printf("%s: %s\n", name, properties->field);              \
    }                                                             \
} while (0)
print_nonnull("request_id", request_id);
print_nonnull("request_id2", request_id2);
print_nonnull("content_type", content_type);
if (properties->content_length) {
    printf("content_length: %llu\n", properties->content_length);
}
print_nonnull("server", server);
print_nonnull("ETag", etag);
print_nonnull("expiration", expiration);
print_nonnull("website_redirect_location", website_redirect_location);
print_nonnull("version_id", version_id);
print_nonnull("allow_origin", allow_origin);
print_nonnull("allow_headers", allow_headers);
print_nonnull("max_age", max_age);
print_nonnull("allow_methods", allow_methods);
print_nonnull("expose_headers", expose_headers);
print_nonnull("storage_class", storage_class);
print_nonnull("server_side_encryption", server_side_encryption);
print_nonnull("kms_key_id", kms_key_id);
print_nonnull("customer_algorithm", customer_algorithm);
print_nonnull("customer_key_md5", customer_key_md5);
print_nonnull("bucket_location", bucket_location);
print_nonnull("obs_version", obs_version);
print_nonnull("restore", restore);
print_nonnull("obs_object_type", obs_object_type);
print_nonnull("obs_next_append_position", obs_next_append_position);
print_nonnull("obs_head_epid", obs_head_epid);
print_nonnull("reserved_indicator", reserved_indicator);
int i;
for (i = 0; i < properties->meta_data_count; i++) {
    printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
        properties->meta_data[i].value);
}
return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
```

```
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData)
{
    int urlLen = 0;
    tempAuthResult * ptrResult = (tempAuthResult *)callbackData;
    urlLen = strlen(tempAuthUrl);
    strcpy_s(ptrResult->tmpAuthUrl, 1024, tempAuthUrl);
    strcpy_s(ptrResult->actualHeaders, 1024, tempAuthActualHeaders);
}
```

Code Examples: Generating a Temporary URL for Listing Objects

This example generates a temporary URL for listing objects.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct __tempAuthResult
{
    char tmpAuthUrl[1024];
    char actualHeaders[1024];
}tempAuthResult;
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData);
int main()
{
    // The following code shows how to generate a URL for listing objects:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
```

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```
    options.bucket_options.bucket_name = bucketName;
    temp_auth_configure tempauth;
    tempAuthResult  ptrResult;
    memset(&ptrResult, 0, sizeof(tempAuthResult));
    //Callback data
    tempauth.callback_data = (void *)(&ptrResult);
    // Validity period
    tempauth.expires = 10;
    // The callback function returns the generated temporary URL.
    tempauth.temp_auth_callback = &tempAuthCallBack_getResult;
    options.temp_auth = &tempauth;
    // Assign values to the callback function.
    obs_response_handler response_handler =
    {
        &response_properties_callback,
        &response_complete_callback
    };
    obs_status ret_status = OBS_STATUS_BUTT;
    char* prefix = "example-prefix";
    char* next_marker = "example-next-marker";
    char* delimiter = "/";
    //Maximum number of objects that can be listed
    int maxkeys = 100;
    obs_list_objects_handler list_bucket_objects_handler =
    {
        response_handler,
        NULL
    };
    list_bucket_objects(&options, prefix, next_marker, delimiter, maxkeys,
        &list_bucket_objects_handler, &ret_status);
    // Check whether the request is successful.
    if (ret_status == OBS_STATUS_OK) {
        printf("the temporary signature url of list objects generated successfully. \n"
            "the temporary signature url is %s. \n"
            "the actualHeaders are %s. \n", ptrResult.tmpAuthUrl, ptrResult.actualHeaders);
    }
    else
    {
        printf(" the temporary signature url of list objects generation failed(%s).\n",
obs_get_status_name(ret_status));
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                              \
    do {                                                \
        if (properties-> field) {                               \
            printf("%s: %s\n", name, properties->field);         \
        }                                                       \
```

```
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
```

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```
    }
}
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData)
{
    int urlLen = 0;
    tempAuthResult * ptrResult = (tempAuthResult *)callbackData;
    urlLen = strlen(tempAuthUrl);
    strcpy_s(ptrResult->tmpAuthUrl, 1024, tempAuthUrl);
    strcpy_s(ptrResult->actualHeaders, 1024, tempAuthActualHeaders);
}
```

Code Examples: Generating a Temporary URL for Deleting an Object

This example generates a temporary URL for deleting an object.

```
#include "eSDKOBS.h"
#include <stdio.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data);
typedef struct __tempAuthResult
{
    char tmpAuthUrl[1024];
    char actualHeaders[1024];
}tempAuthResult;
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData);
int main()
{
    // The following code shows how to generate a URL for deleting an object:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an
example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store
them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before
running the code in this example, configure local environment variables ACCESS_KEY_ID and
SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    // Specify the bucket name, for example, example-bucket-name.
    char * bucketName = "example-bucket-name";
    options.bucket_options.bucket_name = bucketName;
    temp_auth_configure tempauth;
    tempAuthResult  ptrResult;
    memset(&ptrResult, 0, sizeof(tempAuthResult));
    //Callback data
    tempauth.callback_data = (void *)(&ptrResult);
    // Validity period
    tempauth.expires = 10;
    // The callback function returns the generated temporary URL.
    tempauth.temp_auth_callback = &tempAuthCallBack_getResult;
    options.temp_auth = &tempauth;
    // Assign values to the callback function.
    obs_response_handler response_handler =
    {
```

```
    &response_properties_callback,
    &response_complete_callback
};
obs_status ret_status = OBS_STATUS_BUTT;
char* key = "example-object-key";
char* versionid = NULL;
// Information about the object to be deleted.
obs_object_info object_info;
memset(&object_info, 0, sizeof(obs_object_info));
object_info.key = key;
object_info.version_id = versionid;
delete_object(&options, &object_info, &response_handler, &ret_status);
// Check whether the request is successful.
if (ret_status == OBS_STATUS_OK) {
    printf("the temporary signature url of put object generated successfully. \n"
        "the temporary signature url is %s. \n"
        "the actualHeaders are %s. \n", ptrResult.tmpAuthUrl, ptrResult.actualHeaders);
}
else
{
    printf(" the temporary signature url of put object generation failed(%s).\n",
obs_get_status_name(ret_status));
}
// Release the allocated global resources.
obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
if (properties == NULL)
{
    printf("error! obs_response_properties is null!");
    if (callback_data != NULL)
    {
        obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
        printf("server_callback buf is %s, len is %llu",
            data->buffer, data->buffer_len);
        return OBS_STATUS_OK;
    }
    else {
        printf("error! obs_sever_callback_data is null!");
        return OBS_STATUS_OK;
    }
}
// Print the response.
#define print_nonnull(name, field)                                \
do {                                                  \
    if (properties-> field) {                                 \
        printf("%s: %s\n", name, properties->field);          \
    }                                                 \
} while (0)
print_nonnull("request_id", request_id);
print_nonnull("request_id2", request_id2);
print_nonnull("content_type", content_type);
if (properties->content_length) {
    printf("content_length: %llu\n", properties->content_length);
}
print_nonnull("server", server);
print_nonnull("ETag", etag);
print_nonnull("expiration", expiration);
print_nonnull("website_redirect_location", website_redirect_location);
print_nonnull("version_id", version_id);
print_nonnull("allow_origin", allow_origin);
print_nonnull("allow_headers", allow_headers);
print_nonnull("max_age", max_age);
print_nonnull("allow_methods", allow_methods);
print_nonnull("expose_headers", expose_headers);
print_nonnull("storage_class", storage_class);
```

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```
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
// The completion callback function. The content of obs_status and obs_error_details in the callback can
be recorded in callback_data (custom callback data).
void response_complete_callback(obs_status status, const obs_error_details *error, void *callback_data)
{
    if (callback_data) {
        obs_status *ret_status = (obs_status *)callback_data;
        *ret_status = status;
    }
    else {
        printf("Callback_data is NULL");
    }
    if (error && error->message) {
        printf("Error Message: \n   %s\n", error->message);
    }
    if (error && error->resource) {
        printf("Error Resource: \n  %s\n", error->resource);
    }
    if (error && error->further_details) {
        printf("Error further_details: \n   %s\n", error->further_details);
    }
    if (error && error->extra_details_count) {
        int i;
        for (i = 0; i < error->extra_details_count; i++) {
            printf("Error Extra Detail(%d):\n   %s:%s\n", i, error->extra_details[i].name,
                error->extra_details[i].value);
        }
    }
    if (error && error->error_headers_count) {
        int i;
        for (i = 0; i < error->error_headers_count; i++) {
            const char *errorHeader = error->error_headers[i];
            printf("Error Headers(%d):\n    %s\n", i, errorHeader == NULL ? "NULL Header" : errorHeader);
        }
    }
}
void tempAuthCallBack_getResult(char *tempAuthUrl, uint64_t tempAuthUrlLen, char
*tempAuthActualHeaders,
    uint64_t tempAuthActualHeadersLen, void *callbackData)
{
    int urlLen = 0;
    tempAuthResult * ptrResult = (tempAuthResult *)callbackData;
    urlLen = strlen(tempAuthUrl);
    strcpy_s(ptrResult->tmpAuthUrl, 1024, tempAuthUrl);
    strcpy_s(ptrResult->actualHeaders, 1024, tempAuthActualHeaders);
}
```

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16.3 Using a User-Defined Domain Name to Access OBS (SDK for C)

NOTICE

If you have any questions during development, post them on the **Issues** page of GitHub.

To access OBS through a user-defined domain name, you need to first configure a domain name on the Console.

Configuring a User-Defined Domain Name

To enable access to an OBS bucket through a user-defined domain name, you need to first associate the user-defined domain name with the domain name of the bucket.**User-Defined Domain Name Introduction** and **User-Defined Domain Name Configuration**.

⚠ CAUTION

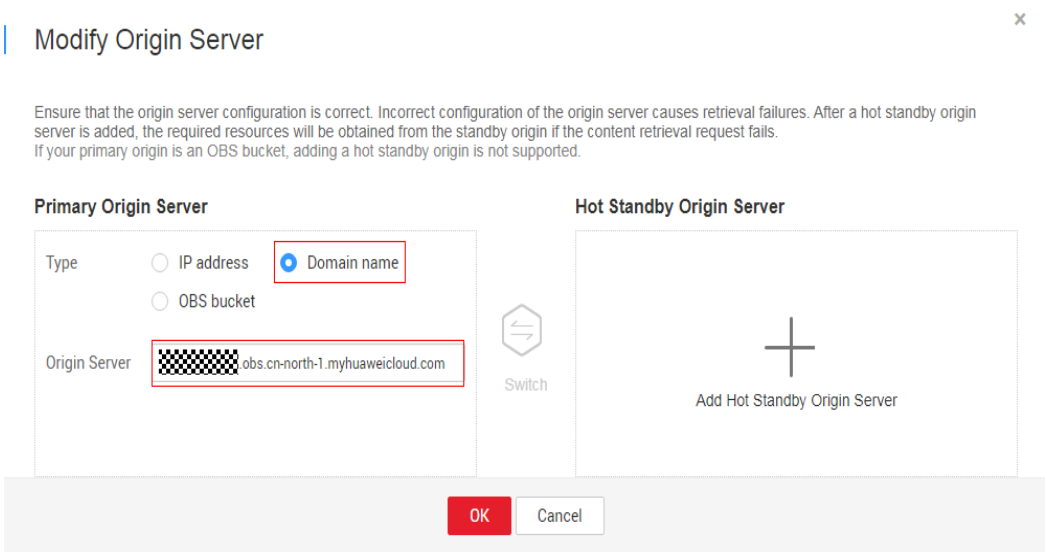
If a user-defined domain name is configured as an acceleration domain name with CDN, you need to enable it to access OBS by configuring settings on CDN console.

The example shows how to configure the user-defined domain name with CDN on Huawei Cloud.

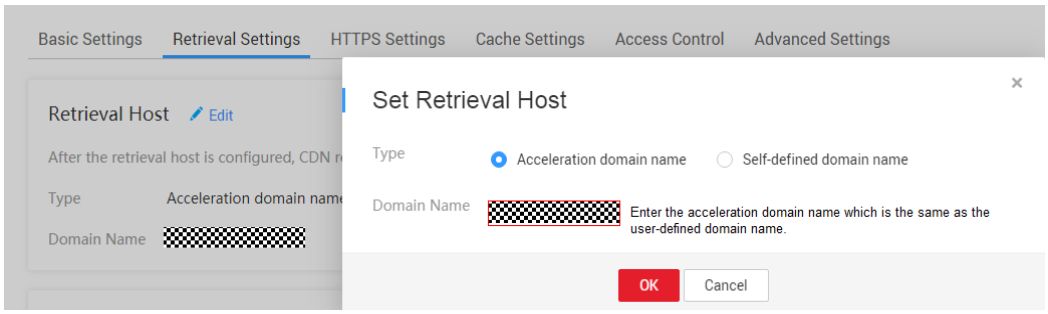
Step 1 Log in to the Huawei Cloud CDN console and select **Domains** from the navigation pane on the left. You can view all configured CDN domain names.

Step 2 Configure the origin server. Click the user-defined domain name to be used to go to the configuration page. Modify the origin server. Set **Type** of **Primary Origin Server** to **Domain name**, and set **Origin Server** to the domain name of the OBS bucket to be accessed.

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Step 3 Set the retrieval host to the acceleration domain name, that is, your user-defined domain name. Otherwise, the retrieval authentication may fail.



----End

When using a user-defined domain name to access OBS, you can call APIs as you normally do, except that you need to configure **option** as shown below:

```
option.bucket_options.useCname = true;
option.bucket_options.host_name = "yourCustomDomain";
```

Code Examples: Uploading an Object Using a Custom Domain Name

This example uploads an object using a custom domain name:

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data);
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct put_file_object_callback_data
{
    FILE *infile;
    uint64_t content_length;
    obs_status ret_status;
} put_file_object_callback_data;
```

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```
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data);
int main()
{
    // The following code shows how to use the put_object function to upload a local file when a custom domain name is used:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys (access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class (storage_class).
    init_obs_options(&options);
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char * bucketName = "";
    options.bucket_options.bucket_name = bucketName;
    // Set the custom domain name.
    options.bucket_options.useCname = true;
    options.bucket_options.host_name = "example.obs.test.cname.com";
    // Initialize the properties of the object to be uploaded.
    obs_put_properties put_properties;
    init_put_properties(&put_properties);
    // Name of the object to be uploaded
    char *key = "example_get_file_test";
    // Uploaded file
    char file_name[256] = "./example_local_file_test.txt";
    uint64_t content_length = 0;
    // Initialize the structure for storing the uploaded data.
    put_file_object_callback_data data;
    memset(&data, 0, sizeof(put_file_object_callback_data));
    // Open the file and obtain the file length.
    content_length = open_file_and_get_length(file_name, &data);
    // Set the callback function.
    obs_put_object_handler putobjectHandler =
    {
        { &response_properties_callback, &put_file_complete_callback },
        &put_file_data_callback
    };
    put_object(&options, key, content_length, &put_properties, 0, &putobjectHandler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("put object from file successfully. \n");
    }
    else
    {
        printf("put object failed(%s).\n",
            obs_get_status_name(data.ret_status));
    }
    if (data.infile != NULL) {
        fclose(data.infile);
    }
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
```

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```
    if (callback_data != NULL)
    {
        obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
        printf("server_callback buf is %s, len is %llu",
            data->buffer, data->buffer_len);
        return OBS_STATUS_OK;
    }
    else {
        printf("error! obs_sever_callback_data is null!");
        return OBS_STATUS_OK;
    }
}
// Print the response.
#define print_nonnull(name, field)                              \
do {                                                            \
    if (properties-> field) {                                   \
        printf("%s: %s\n", name, properties->field);            \
    }                                                           \
} while (0)
print_nonnull("request_id", request_id);
print_nonnull("request_id2", request_id2);
print_nonnull("content_type", content_type);
if (properties->content_length) {
    printf("content_length: %llu\n", properties->content_length);
}
print_nonnull("server", server);
print_nonnull("ETag", etag);
print_nonnull("expiration", expiration);
print_nonnull("website_redirect_location", website_redirect_location);
print_nonnull("version_id", version_id);
print_nonnull("allow_origin", allow_origin);
print_nonnull("allow_headers", allow_headers);
print_nonnull("max_age", max_age);
print_nonnull("allow_methods", allow_methods);
print_nonnull("expose_headers", expose_headers);
print_nonnull("storage_class", storage_class);
print_nonnull("server_side_encryption", server_side_encryption);
print_nonnull("kms_key_id", kms_key_id);
print_nonnull("customer_algorithm", customer_algorithm);
print_nonnull("customer_key_md5", customer_key_md5);
print_nonnull("bucket_location", bucket_location);
print_nonnull("obs_version", obs_version);
print_nonnull("restore", restore);
print_nonnull("obs_object_type", obs_object_type);
print_nonnull("obs_next_append_position", obs_next_append_position);
print_nonnull("obs_head_epid", obs_head_epid);
print_nonnull("reserved_indicator", reserved_indicator);
int i;
for (i = 0; i < properties->meta_data_count; i++) {
    printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
        properties->meta_data[i].value);
}
return OBS_STATUS_OK;
}
int put_file_data_callback(int buffer_size, char *buffer,
    void *callback_data)
{
    put_file_object_callback_data *data =
        (put_file_object_callback_data *)callback_data;
    int ret = 0;
    if (data->content_length) {
        int toRead = ((data->content_length > (unsigned)buffer_size) ?
            (unsigned)buffer_size : data->content_length);
        ret = fread(buffer, 1, toRead, data->infile);
    }
    uint64_t originalContentLength = data->content_length;
    data->content_length -= ret;
    if (data->content_length) {
        printf("%llu bytes remaining ", (unsigned long long)data->content_length);
```

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```
        printf("(%d%% complete) ...\n",
            (int)(((originalContentLength - data->content_length) * 100) / originalContentLength));
    }
    return ret;
}
void put_file_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    put_file_object_callback_data *data = (put_file_object_callback_data *)callback_data;
    data->ret_status = status;
}
uint64_t open_file_and_get_length(char *localfile, put_file_object_callback_data *data)
{
    uint64_t content_length = 0;
    const char *body = 0;
    if (!content_length)
    {
        struct stat statbuf;
        if (stat(localfile, &statbuf) == -1)
        {
            fprintf(stderr, "\nERROR: Failed to stat file %s: ",
                localfile);
            return 0;
        }
        content_length = statbuf.st_size;
    }
    if (!(data->infile = fopen(localfile, "rb")))
    {
        fprintf(stderr, "\nERROR: Failed to open input file %s: ",
            localfile);
        return 0;
    }
    data->content_length = content_length;
    return content_length;
}
```

Code Examples: Downloading an Object Using a Custom Domain Name

This example downloads an object using a custom domain name.

```
#include "eSDKOBS.h"
#include <stdio.h>
#include <sys/stat.h>
// The response callback function. The content of properties in the callback can be recorded in
callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data);
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data);
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data);
typedef struct get_object_callback_data
{
    FILE *outfile;
    obs_status ret_status;
}get_object_callback_data;
FILE * write_to_file(char *localfile);
int main()
{
    // The following code shows how to use the get_object function to download an object to a local file
when a custom domain name is used:
    // Call the obs_initialize method at the program entry to initialize global resources such as the network
and memory.
    obs_initialize(OBS_INIT_ALL);
    obs_options options;
    // Create and initialize options, including the access domain name (host_name), access keys
(access_key_id and access_key_secret), bucket name (bucket_name), and bucket storage class
(storage_class).
    init_obs_options(&options);
```

```
    // Enter the endpoint corresponding to the bucket for host_name. CN-Hong Kong is used here as an example. Replace it with the one in your actual situation.
    options.bucket_options.host_name = "obs.ap-southeast-1.myhuaweicloud.com";
    // Hard-coded or plaintext AK and SK are risky. For security purposes, encrypt your AK and SK and store them in the configuration file or environment variables.
    // In this example, the AK and SK are stored in environment variables for identity authentication. Before running the code in this example, configure local environment variables ACCESS_KEY_ID and SECRET_ACCESS_KEY.
    options.bucket_options.access_key = getenv("ACCESS_KEY_ID");
    options.bucket_options.secret_access_key = getenv("SECRET_ACCESS_KEY");
    char * bucketName = "";
    options.bucket_options.bucket_name = bucketName;
    // Set a custom domain name.
    options.bucket_options.useCname = true;
    options.bucket_options.host_name = "example.obs.test.cname.com";
    // Set the name of the local file to which the object is downloaded.
    char *file_name = "./example_get_file_test";
    obs_object_info object_info;
    // Set the object to be downloaded.
    memset(&object_info, 0, sizeof(obs_object_info));
    object_info.key = "example_get_file_test";
    object_info.version_id = NULL;
    //Set the structure for storing the downloaded object data based on service requirements.
    get_object_callback_data data;
    data.ret_status = OBS_STATUS_BUTT;
    data.outfile = write_to_file(file_name);
    // Define parameters for range-based download.
    obs_get_conditions getcondition;
    memset(&getcondition, 0, sizeof(obs_get_conditions));
    init_get_properties(&getcondition);
    // Download start position. The default value is 0, indicating that the download starts from byte 0.
    getcondition.start_byte = 0;
    // Download length. The default value is 0, indicating that the object is downloaded until the end.
    // getcondition.byte_count = 0;
    // Define the download callback function.
    obs_get_object_handler get_object_handler =
    {
        { &response_properties_callback,
          &get_object_complete_callback},
        &get_object_data_callback
    };
    get_object(&options, &object_info, &getcondition, 0, &get_object_handler, &data);
    if (OBS_STATUS_OK == data.ret_status) {
        printf("get object successfully. \n");
    }
    else
    {
        printf("get object failed(%s).\n", obs_get_status_name(data.ret_status));
    }
    fclose(data.outfile);
    // Release the allocated global resources.
    obs_deinitialize();
}
// The response callback function. The content of properties in the callback can be recorded in callback_data (custom callback data).
obs_status response_properties_callback(const obs_response_properties *properties, void *callback_data)
{
    if (properties == NULL)
    {
        printf("error! obs_response_properties is null!");
        if (callback_data != NULL)
        {
            obs_sever_callback_data *data = (obs_sever_callback_data *)callback_data;
            printf("server_callback buf is %s, len is %llu",
                data->buffer, data->buffer_len);
            return OBS_STATUS_OK;
        }
        else {
            printf("error! obs_sever_callback_data is null!");
```

```
            return OBS_STATUS_OK;
        }
    }
    // Print the response.
#define print_nonnull(name, field)                                \
    do {                                                          \
        if (properties-> field) {                                 \
            printf("%s: %s\n", name, properties->field);          \
        }                                                         \
    } while (0)
    print_nonnull("request_id", request_id);
    print_nonnull("request_id2", request_id2);
    print_nonnull("content_type", content_type);
    if (properties->content_length) {
        printf("content_length: %llu\n", properties->content_length);
    }
    print_nonnull("server", server);
    print_nonnull("ETag", etag);
    print_nonnull("expiration", expiration);
    print_nonnull("website_redirect_location", website_redirect_location);
    print_nonnull("version_id", version_id);
    print_nonnull("allow_origin", allow_origin);
    print_nonnull("allow_headers", allow_headers);
    print_nonnull("max_age", max_age);
    print_nonnull("allow_methods", allow_methods);
    print_nonnull("expose_headers", expose_headers);
    print_nonnull("storage_class", storage_class);
    print_nonnull("server_side_encryption", server_side_encryption);
    print_nonnull("kms_key_id", kms_key_id);
    print_nonnull("customer_algorithm", customer_algorithm);
    print_nonnull("customer_key_md5", customer_key_md5);
    print_nonnull("bucket_location", bucket_location);
    print_nonnull("obs_version", obs_version);
    print_nonnull("restore", restore);
    print_nonnull("obs_object_type", obs_object_type);
    print_nonnull("obs_next_append_position", obs_next_append_position);
    print_nonnull("obs_head_epid", obs_head_epid);
    print_nonnull("reserved_indicator", reserved_indicator);
    int i;
    for (i = 0; i < properties->meta_data_count; i++) {
        printf("x-obs-meta-%s: %s\n", properties->meta_data[i].name,
            properties->meta_data[i].value);
    }
    return OBS_STATUS_OK;
}
obs_status get_object_data_callback(int buffer_size, const char *buffer,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    size_t wrote = fwrite(buffer, 1, buffer_size, data->outfile);
    return ((wrote < (size_t)buffer_size) ?
        OBS_STATUS_AbortedByCallback : OBS_STATUS_OK);
}
void get_object_complete_callback(obs_status status,
    const obs_error_details *error,
    void *callback_data)
{
    get_object_callback_data *data = (get_object_callback_data *)callback_data;
    data->ret_status = status;
}
FILE * write_to_file(char *localfile)
{
    FILE *outfile = 0;
    if (localfile) {
        struct stat buf;
        if (stat(localfile, &buf) == -1) {
            outfile = fopen(localfile, "wb");
        }
        else {
```

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```
            outfile = fopen(localfile, "a");
        }
        if (!outfile) {
            fprintf(stderr, "\nERROR: Failed to open output file %s: ",
                localfile);
            return outfile;
        }
    } else {
        fprintf(stderr, "\nERROR: Failed to open output file, it's NULL, write object to stdout.",
            localfile);
        outfile = stdout;
    }
    return outfile;
}
```

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17 Troubleshooting (SDK for C)

17.1 OBS Server-Side Error Codes (SDK for C)

If the OBS server encounters an error when processing a request, a response containing the error code and error description is returned. The following table lists details about each error code and HTTP status code:

HTTP Status Code	Error Code	Error Message	Solution
301 Moved Permanently	PermanentRedirect	The requested bucket has been permanently redirected to a new address. All future requests must be sent to the new address.	Send the request to the returned redirection address.
301 Moved Permanently	WebsiteRedirect	The website request lacks **bucketName**.	Put the bucket name in the request and try again.
307 Moved Temporarily	TemporaryRedirect	Temporary redirection. If the DNS is updated, the request is redirected to the bucket.	The system automatically redirects the request, or the client needs to send the request to the redirection address.

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HTTP Status Code	Error Code	Error Message	Solution
400 Bad Request	BadDigest	The client-specified value of **Content-MD5** does not match the value received by OBS.	Check whether the MD5 value carried in the header is the same as that calculated based on the message body.
400 Bad Request	BadDomainName	The domain name is invalid.	Use a valid domain name.
400 Bad Request	BadRequest	Invalid request parameters.	Modify the parameter based on the error details returned in the message body.
400 Bad Request	CustomDomainAreadyExist	The configured domain already exists.	The domain has been configured and does not need to be configured again.
400 Bad Request	CustomDomainNotExist	The domain to be deleted does not exist.	The domain is not configured or has been deleted. You do not need to delete it.
400 Bad Request	EntityTooLarge	The size of the object uploaded using the POST method exceeds the upper limit.	Modify the conditions specified in the upload policy or reduce the object size.
400 Bad Request	EntityTooSmall	The size of the object uploaded using the POST method does not reach the lower limit.	Modify the conditions specified in the upload policy or increase the object size.
400 Bad Request	IllegalLocation-ConstraintExcep-tion	A request without **Location** is sent for creating a bucket in a non-default region.	Send the bucket creation request to the default region, or send the request with the **Location** of the non-default region.

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HTTP Status Code	Error Code	Error Message	Solution
400 Bad Request	IncompleteBody	The request body received is incomplete due to network or other problems.	Upload the object again.
400 Bad Request	IncorrectNumber-OfFilesInPost Request	Each POST request must contain a file to be uploaded.	Carry a file to be uploaded.
400 Bad Request	InvalidArgument	Invalid parameter.	Modify the parameter based on the error details returned in the message body.
400 Bad Request	InvalidBucket	The bucket to be accessed does not exist.	Try another bucket name.
400 Bad Request	InvalidBucketNam e	The bucket name specified in the request is invalid because it has exceeded the maximum allowed length or contains special characters that are not allowed.	Try another bucket name.
400 Bad Request	InvalidEncryptio-nAlgorithmError	Incorrect encryption algorithm. The object cannot be decrypted due to incorrect encryption header carried when downloading the SSE-C encrypted object.	Carry the correct encryption header when downloading the object.
400 Bad Request	InvalidLocation-Constraint	The specified **Location** in the bucket creation request is invalid or does not exist.	Specify the correct **Location** in the bucket creation request.

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HTTP Status Code	Error Code	Error Message	Solution
400 Bad Request	InvalidPart	One or more specified parts are not found. The parts may not be uploaded or the specified entity tags do not match those of the parts.	Specify the correct parts and entity tags.
400 Bad Request	InvalidPartOrder	Parts are not listed in ascending order by part number.	Sort the parts in ascending order and assemble them again.
400 Bad Request	InvalidPolicyDocument	The content of the form does not meet the conditions specified in the policy document.	Modify the policy in the form based on the error details in the message body and try again.
400 Bad Request	InvalidRedirectLocation	Invalid redirection address.	Specify the correct address.
400 Bad Request	InvalidRequest	Invalid request.	Modify the parameter based on the error details returned in the message body.
400 Bad Request	InvalidRequestBody	The request body is invalid. The request requires a message body but no message body is included.	Upload the message body in the correct format.
400 Bad Request	InvalidTargetBucketForLogging	The delivery group has no ACL permission for the target bucket.	Configure the target bucket ACL and try again.
400 Bad Request	KeyTooLongError	The provided key is too long.	Use a shorter key.
400 Bad Request	KMS.DisabledException	The master key is disabled in SSE-KMS.	Replace the key and try again, or contact the technical support.

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HTTP Status Code	Error Code	Error Message	Solution
400 Bad Request	KMS.NotFoundException	The master key does not exist in SSE-KMS.	Retry with the correct master key.
400 Bad Request	MalformedACLError	The provided XML file has syntax errors or does not meet the format requirements.	Use the correct XML format and retry.
400 Bad Request	MalformedError	The XML format in the request is incorrect.	Use the correct XML format and retry.
400 Bad Request	MalformedLoggingStatus	The XML format of **Logging** is incorrect.	Use the correct XML format and retry.
400 Bad Request	MalformedPolicy	The bucket policy fails the check.	Modify the bucket policy based on the error details returned in the message body.
400 Bad Request	MalformedQuotaError	The Quota XML format is incorrect.	Use the correct XML format and retry.
400 Bad Request	MalformedXML	A configuration item is in the wrong XML format.	Use the correct XML format and retry.
400 Bad Request	MaxMessageLengthExceeded	A message body is carried in the request for copying an object.	Remove the message body and retry.
400 Bad Request	MetadataTooLarge	The size of the metadata header exceeds the upper limit.	Reduce the size of the metadata header.
400 Bad Request	MissingRegion	The region information is missing in the request, and no default region is defined in the system.	Carry the region information in the request.

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HTTP Status Code	Error Code	Error Message	Solution
400 Bad Request	MissingRequestBodyError	An empty XML file is sent in a request.	Provide the correct XML file.
400 Bad Request	MissingRequired-Header	A required header is missing in the request.	Provide required headers.
400 Bad Request	MissingSecurity-Header	A required header is missing in the request.	Provide required headers.
400 Bad Request	TooManyBuckets	You have attempted to create more buckets than allowed.	Delete some buckets and try again.
400 Bad Request	TooManyCustomDomains	The number of user domains exceeds the upper limit.	Delete some user domains and try again.
400 Bad Request	TooManyWrongSignature	The request is rejected due to too many signature errors.	Use the correct AK and try again.
400 Bad Request	UnexpectedContent	The request requires a message body, which is not carried by the client. Or the request does not require a message body but the client carried one.	Try again according to the instruction.
400 Bad Request	UserKeyMustBeSpecified	This operation is only available to some users.	Contact the technical support.
403 Forbidden	AccessDenied	Access is denied because the request does not carry a date header or the header format is incorrect.	Provide a correct date header in the request.

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HTTP Status Code	Error Code	Error Message	Solution
403 Forbidden	AccessForbidden	Insufficient permissions. No CORS rule is configured for the bucket, or the CORS rule is not matched.	Modify the CORS configuration of the bucket or send the OPTIONS request that matches the CORS configuration of the bucket.
403 Forbidden	AllAccessDisabled	You have no permission to perform the operation. The bucket name is forbidden.	Try another bucket name.
403 Forbidden	DeregisterUserId	The user has been deregistered.	Top up the account or register a new account.
403 Forbidden	InArrearOrInsufficientBalance	The user account is in arrears, or the account balance insufficient.	Top up the account.
403 Forbidden	InsufficientStorageSpace	Insufficient storage space.	If the quota is exceeded, increase the quota or delete some objects.
403 Forbidden	InvalidAccessKeyId	The access key ID provided by the customer does not exist in the system.	Provide the correct access key ID.
403 Forbidden	NotSignedUp	You have not registered with the system.	Register with OBS.
403 Forbidden	RequestTimeTooSkewed	The request time and the server time differ a lot.	Check whether there is a large difference between the client time and the current time.

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HTTP Status Code	Error Code	Error Message	Solution
403 Forbidden	SignatureDoesNotMatch	The provided signature does not match the signature calculated by OBS.	Check your secret access key and signature calculation method.
403 Forbidden	Unauthorized	You have not been authenticated in real name.	Complete real-name authentication and try again.
404 Not Found	NoSuchBucket	The specified bucket does not exist.	Create a bucket and perform the operation again.
404 Not Found	NoSuchBucketPolicy	No bucket policy exists.	Configure a bucket policy.
404 Not Found	NoSuchCORSConfiguration	No CORS configuration exists.	Configure CORS first.
404 Not Found	NoSuchCustomDomain	The requested custom domain does not exist.	Set a custom domain first.
404 Not Found	NoSuchKey	The specified key does not exist.	Upload an object first.
404 Not Found	NoSuchLifecycle-Configuration	The requested lifecycle rule does not exist.	Configure a lifecycle rule first.
404 Not Found	NoSuchUpload	The specified multipart upload does not exist. The upload ID does not exist or the multipart upload has been aborted or completed.	Use the existing part or reinitialize the part.
404 Not Found	NoSuchVersion	The specified version ID does not match any existing version.	Use a correct version ID.
404 Not Found	NoSuchWebsiteConfiguration	The requested website does not exist.	Configure the website first.

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HTTP Status Code	Error Code	Error Message	Solution
405 Method Not Allowed	MethodNotAllowed	The specified method is not allowed against the requested resource. The message "Specified method is not supported." is returned.	The method is not allowed.
408 Request Timeout	RequestTimeout	No read or write operation is performed within the timeout period of the socket connection between the user and the server.	Check the network and try again, or contact technical support.
409 Conflict	BucketAlreadyExists	The requested bucket name already exists. The bucket namespace is shared by all users of OBS. Select another name and retry.	Try another bucket name.
409 Conflict	BucketAlreadyOwnedByYou	You already have a bucket with the same name.	You do not need to create this bucket again.
409 Conflict	BucketNotEmpty	The bucket that you tried to delete is not empty.	Delete the objects in the bucket and then delete the bucket.
409 Conflict	InvalidBucketState	Invalid bucket status. After cross-region replication is configured, bucket versioning cannot be disabled.	Keep bucket versioning enabled or disable cross-region replication.
409 Conflict	OperationAborted	A conflicting operation is being performed on this resource. Try again later.	Try again later.

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HTTP Status Code	Error Code	Error Message	Solution
409 Conflict	ServiceNotSupported	The request method is not supported by the server.	Not supported by the server. Contact the technical support.
411 Length Required	MissingContentLength	The HTTP header **Content-Length** is not provided.	Provide the **Content-Length** header.
412 Precondition Failed	PreconditionFailed	At least one of the specified preconditions is not met.	Modify the request based on **Condition** in the returned message body.
416 Client Requested Range Not Satisfiable	InvalidRange	The requested range cannot be obtained.	Replace the range value and try again.
500 Internal Server Error	InternalError	An internal error occurs. Retry later.	Contact the technical support.
501 Not Implemented	ServiceNotImplemented	The request method is not implemented by the server.	Not supported currently. Contact the technical support.
503 Service Unavailable	ServiceUnavailable	The server is overloaded or has internal errors.	Try again later or contact the technical support.
503 Service Unavailable	SlowDown	Too frequent requests. Reduce your request frequency.	Too frequent requests. Reduce your request frequency.

17.2 SDK Error Handling (SDK for C)

SDK errors include the errors returned during the check of function parameters and those returned by the OBS server.

SDK error handling information:

- obs_status: Error code
- obs_get_status_name(): Obtaining the error description
- obs_status_is_retryable(): Checking whether the error code requires service retry

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17.3 Log Analysis (SDK for C)

Log Path

The OBS C SDK log path is specified by the **LogPath** field in **OBS.ini**. By default, logs are stored in the **logs** directory at the same level as the **lib** directory of the C SDK dynamic library. To locate a fault, view **eSDK-OBS-API-*-C.run.log** or **obs-sdk-c.run.log** in the **logs** directory.

OBS.ini must be in the same directory as **libeSDKLogAPI.so**.

Log Format

The SDK log format is: Log time|log level|thread ID|log content. The following are example logs:

```
Run logs
2018-05-15 22:22:54 803| INFO|[140677572568864]|request_perform start
```

Log Levels

When current logs cannot be used to troubleshoot system faults, you can change the log level to obtain more information. You can obtain the most information in **DEBUG(0)** logs and the least information in **ERROR(3)** logs.

Log level description:

- DEBUG(0): Debug level. If this level is set, logs at the **INFO** level and some debugging information will be printed.
- INFO(1): Information level. If this level is set, logs at the **WARN** level, calling process and key information of OBS APIs will be printed.
- **WARN(2)**: Warning level. If this level is set, logs at the **ERROR** level and some critical events, such as **curl_global_init** initialization fail, will be printed.
- **ERROR(3)**: Error level. If this level is set, only error information will be printed.

Enabling System Logging

In the **lib** directory, modify **OBS.ini**, modify the size, number, and level of logs. (The ***_Run** parameter is the most common configuration item.)

```
;Every line must be less than 1024
[LogConfig]
;Log Size: unit=KB, 10MB = 10KB * 1024 = 10240KB
LogSize_Interface=10240
LogSize_Operation=10240
LogSize_Run=10240
;Log Num
LogNum_Interface=10
LogNum_Operation=10
LogNum_Run=10
;Log level: debug = 0,info = 1,warn = 2,error = 3
LogLevel_Interface=0
LogLevel_Operation=0
LogLevel_Run=0
```

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```
;LogFilePermission
LogFilePermission=0600
[ProductConfig]
;Product Name
sdkname=eSDK-OBS-API-Linux-C
[LogPath]
;Log Path is relative to the path of configuration file
LogPath=../logs
```

Other Configurations

In Windows, the **LogPath** field in the **OBS.ini** can be read in type wchar_t. To do that, you need to set the encoding for the file path first. An example is given here:

set_file_path_code(UNICODE_CODE);//**ANSI_CODE** is used by default.

In addition, the local file path for functions listed in the table below must also be in type wchar_t (parameters are passed in type char* and processed into type wchar_t internally).

Table 17-1

Related Function	Description
download_file	The **downLoad_file** and **check_point_file** members of the **download_file_config** parameter must be in type wchar_t. Pass them in type char*.
upload_file	The **upload_file** and **check_point_file** members of the **upload_file_config** parameter must be in type wchar_t. Pass them in type char*.
set_obs_log_path	The **log_path** parameter must be in type wchar_t. Pass it in type char*.

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18 FAQs (SDK for C)

18.1 Invalid Proxy Settings (SDK for C)

- When the proxy is configured in a Windows SDK demo, the program reports the following error and the proxy configuration fails.

  ```
  Run-Time Check Failure #2 - Stack around the variable 'ret_status' was corrupted.
  ```

  Root cause: Due to asynchronous updates, the demo header file **eSDKOBS.h** of certain SDK versions diverges from the SDK **eSDKOBS.h**, rendering the proxy settings in the option invalid.

  Solution:

  a. Replace *yourSDKpath***source\eSDK_OBS_API\eSDK_OBS_API_C++\inc\eSDKOBS.h** with *yourSDKpath***source\eSDK_OBS_API\eSDK_OBS_API_C++\build\obs\demo\eSDKOBS.h**.

  b. Modify the demo as instructed here to adapt to the changes of **eSDKOBS.h**. (The adaptation of version 3.22.7 is used as an example. The adaptation process of other versions may differ.)

  In the *yourSDKpath***source\eSDK_OBS_API\eSDK_OBS_API_C++\build\obs\demo\ demo_windows.cpp** file, in line 4749, add **obs_upload_file_server_callback server_callback**; in line 4750, add **, server_callback** after the fourth parameter in the **upload_file** function. See the following figure.

  ```
  };
  obs_upload_file_server_callback server_callback;
  upload_file(&option, key, 0, &uploadFileInfo, server_callback, &Handler, 0);
  if (statusG == OBS_STATUS_OK) {
      printf("test upload file successfully. \n");
  }
  else
  {
  printf("test upload file faied.\n");
  printError();
  return ;
  }
  }
  ```

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- The proxy is configured but the connection still fails.

  Root cause: The proxy might not be configured in the **get_api_version** function of the SDK **request.c**.

  Solution:

  Configure the proxy (add the **CURLOPT_PROXY** and **CURLOPT_PROXYUSERPWD** items for curl) in the **get_api_version** function by referring to the method for configuring the proxy in the **setup_curl** function of the SDK **request.c**.

18.2 How Do I Get My Account ID and User ID?

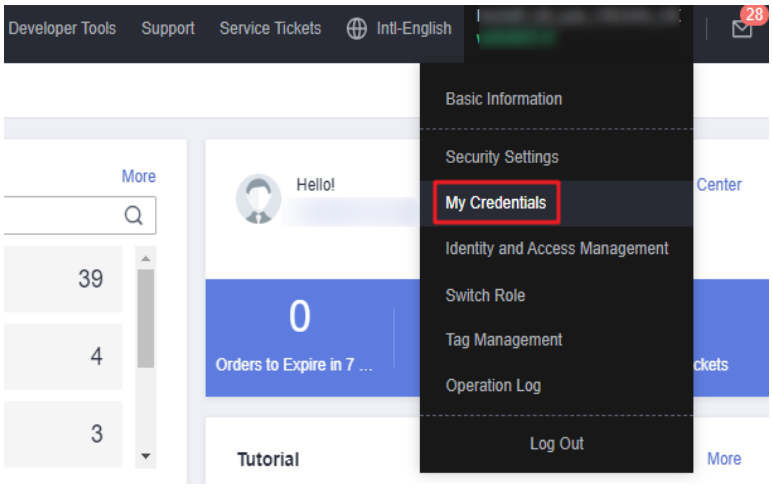
Obtaining Account, IAM User, and Project Information

- **Using the console**

  a. On the Huawei Cloud homepage, click **Console** in the upper right corner.

  b. In the upper right corner, hover over the username and choose **My Credentials** from the drop-down list.

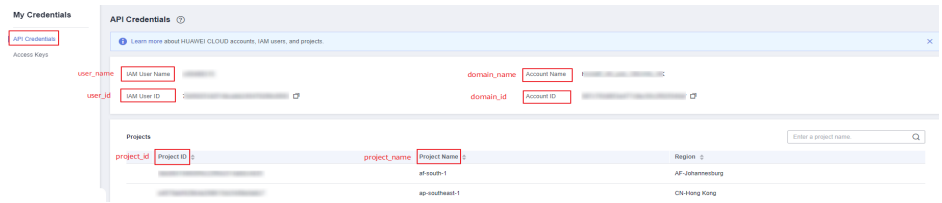
  Figure 18-1 My Credentials

  c. On the **API Credentials** page, view the account name, account ID, IAM user name, IAM user ID, project name, and project ID.

  The project ID varies depending on the region where your service is located.

  Figure 18-2 Viewing the account, user, and project information

- **Calling an API**

  – To obtain a user ID, see **Listing IAM Users**.

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- To obtain a project ID, see **Querying Project Information**.

Obtaining User Group Information

Step 1 Log in to the Huawei Cloud console, access the IAM console, and choose **User Groups** in the navigation pane.

Step 2 Expand the details of the desired user group and view its name and ID.

----End

Obtaining Region Information

Step 1 Log in to the Huawei Cloud console, access the IAM console, and choose **Projects** in the navigation pane.

Step 2 View the content in the **Project Name** column. The content in this column indicates the ID of the region where the project belongs.

----End

Obtaining Agency Information

Step 1 Log in to the Huawei Cloud console, access the IAM console, and choose **Agencies** in the navigation pane.

Step 2 Hover over the desired agency to view its name (in the first line) and ID (in the second line) in the dark pop-up box.

----End

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