VPC Endpoint

Best Practices

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1 Using VPC Endpoint and Direct Connect to Enable On-premises Data Centers to Access Cloud Services

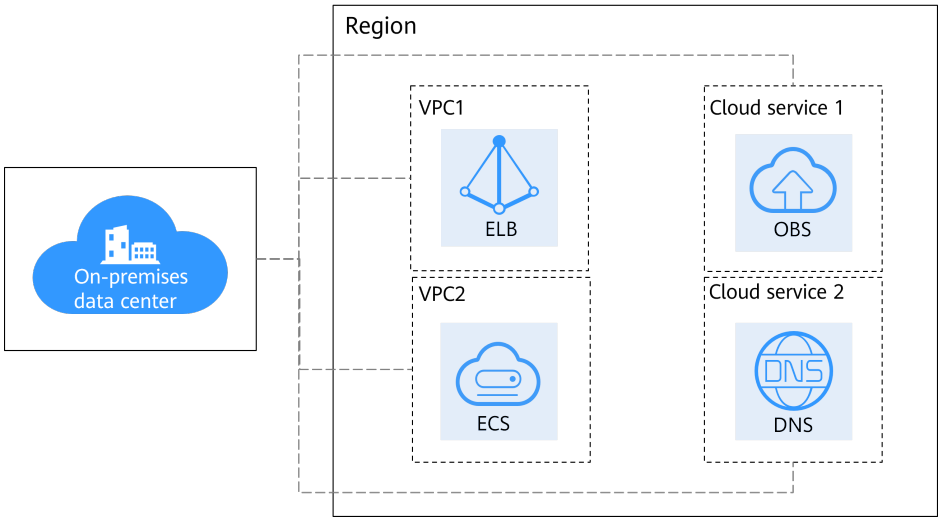
1.1 Overview

Scenarios

After an enterprise migrated some of its workloads to the cloud through Direct Connect or VPN, some production and testing workloads are running in its on-premises data center, and some are running on Huawei Cloud or other cloud platforms. With such a complex hybrid cloud architecture, the on-premises data center often needs to access cloud services through intranets. However, many cloud resources and services still cannot be accessed through Direct Connect or Virtual Private Network (VPN) only.

Figure 1-1 shows the enterprise's requirements: The on-premises data center accesses ELB in VPC1, ECS in VPC2, and other cloud services (OBS and DNS) without using the Internet.

Figure 1-1 On-premises data center accessing Huawei Cloud services



Solution Architecture

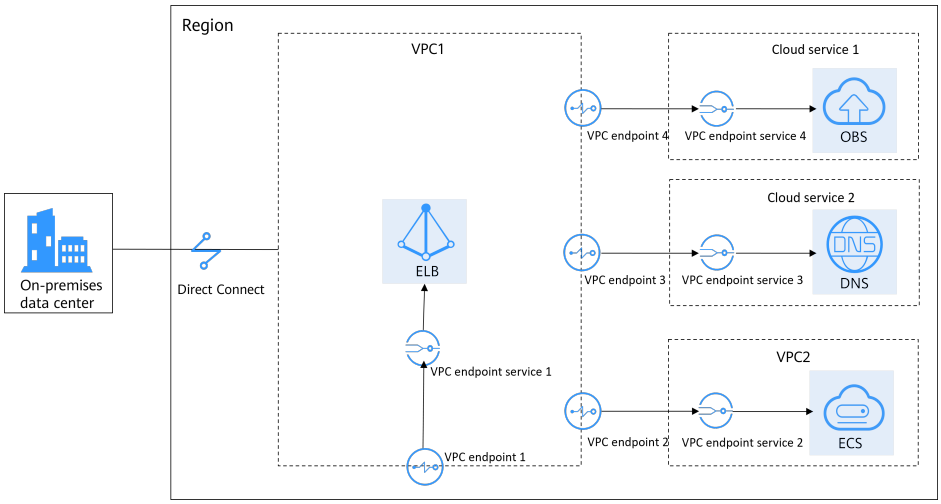
In the solution we offered to meet their requirements, the following two services are used:

- **Direct Connect**: Direct Connect allows you to establish a stable, high-speed, low-latency, secure dedicated network connection that connects your on-premises data center to Huawei Cloud. Direct Connect allows you to maximize legacy IT facilities and leverage cloud services to build a flexible, scalable hybrid cloud computing environment.
- **VPC Endpoint**: VPC Endpoint enables access to Huawei Cloud services or other private services over the Huawei Cloud network. It provides flexible networking, freeing the enterprise from using EIPs.

In **Figure 1-2**:

- Direct Connect enables communications between the on-premises data center and VPC1.
- With VPC endpoint 1, the on-premises data center can access ELB in VPC1.
- With VPC endpoint 2, the on-premises data center can access the ECS in VPC2.
- With VPC endpoint 3, the on-premises data center can access Domain Name Service (DNS) over the intranet.
- With VPC endpoint 4, the on-premises data center can access Object Storage Service (OBS) over the intranet.

Figure 1-2 On-premises data center accessing Huawei Cloud services using Direct Connect and VPC Endpoint



CAUTION

- This practice shows the process for how to use a VPC endpoint in a VPC to connect an on-premises data center to an ECS in another VPC. To enable the on-premises data center to access other cloud services, configure them as VPC endpoint services. For details, see **Creating a VPC Endpoint Service**.
- Not all cloud services can be accessed from an on-premises data center through VPC endpoints over the intranet. Only services that support VPC Endpoint can be accessed from an on-premises data center through VPC endpoints over the intranet.

Advantages

- VPC endpoints take effect a few seconds after they are created.
- Customers can use VPC endpoints to access resources across VPCs without having to use EIPs.
- Unknown risks caused by server information leakage can be prevented, ensuring security and privacy.

Constraints

- A HUAWEI ID is available and must be configured with operation permissions for related services.
- The HUAWEI ID is not in arrears and the balance is sufficient to pay for the resources involved in this best practice.
- Direct Connect locations have been determined and the site survey of the on-premises data center has been completed together with the carrier. For details, see **Preparations**.
- The cloud resources or services to be accessed have been developed based on the VPC Endpoint standard development process and rolled out in the corresponding region.

1.2 Resource and Cost Planning

This section describes the resource and cost planning for using a VPC endpoint in a VPC to connect an on-premises data center to an ECS in another VPC. The details include:

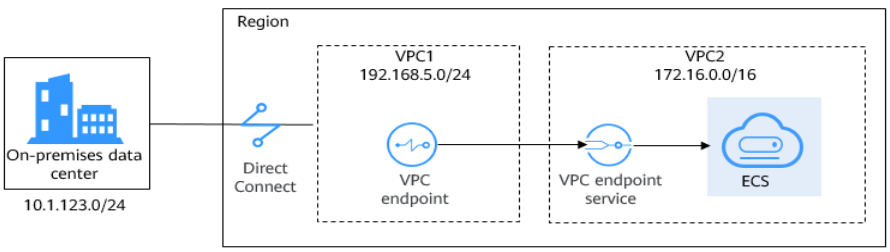
Table 1-1 Description for cross-region VPC communications

Region	Resource	Description	Quantity	Billing
CN-Hong Kong	VPC	Subnet of VPC1: 192.168.0.0/16 Subnet of VPC2: 172.16.0.0/16	2	Free
	Connection	• Local subnet of the virtual gateway: 192.168.5.0/24 • Local gateway of the virtual interface: 10.0.0.1/30 • Remote gateway of the virtual interface: 10.0.0.2/30 • Remote subnet of the virtual interface: 10.1.123.0/24	1	For details, see Direct Connect **Product Pricing Details**.
	ECS	The IP address is automatically assigned.	2	For details, see ECS **Product Pricing Details**.
	VPC endpoint	The IP address is automatically assigned.	1	For details, see VPC Endpoint **Product Pricing Details**.

The network topology is as follows.

- The on-premises data center is connected to VPC1 through Direct Connect.
- VPC1 accesses the ECS in VPC2 through the VPC endpoint service.
- The on-premises data center accesses the ECS in VPC2 through VPC1.

Figure 1-3 Network topology



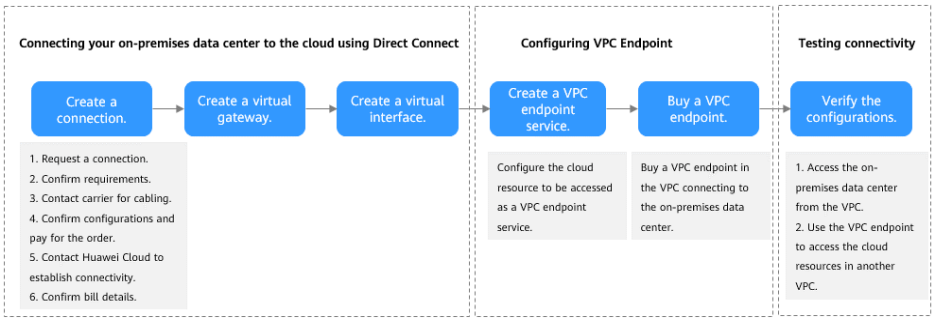
1.3 On-premises Data Center Accessing Cloud Resources Through the Huawei Cloud Intranet

This practice is about accessing cloud servers in a VPC from an on-premises data center.

The on-premises data center is connected to a VPC through a Direct Connect connection and needs to access cloud servers in the VPC without using the Internet.

Figure 1-4 shows the operation process of this best practice.

Figure 1-4 Process for using Direct Connect and VPC Endpoint to access cloud resources



1.4 Procedure (Configuring an ECS as a VPC Endpoint Service)

Step 1 Create a Direct Connect connection.

1. Create a connection.
   a. Go to the **Connections** page.
   b. In the upper left corner of the page, click  and select a region and project.
   c. In the upper right corner, click **Create Connection**.
   d. On the **Create Connection** page, enter the equipment room details and select the Direct Connect location and port based on **Table 1-2**.

Figure 1-5 Creating a self-service connection

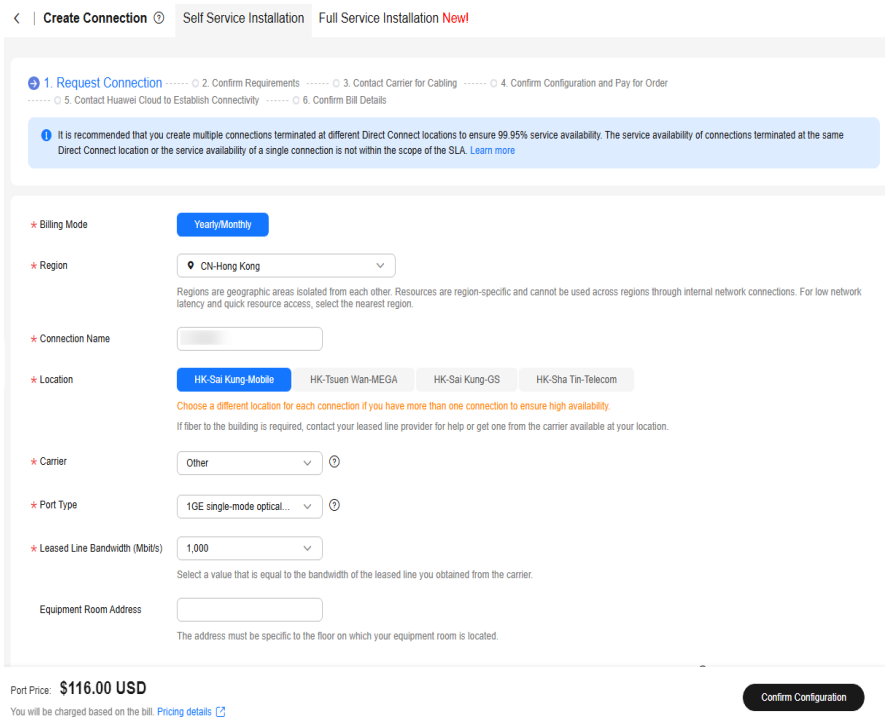


Table 1-2 Parameters for creating a connection

Parameter	Example Value	Description
Billing Mode	Yearly/Monthly	Specifies how you will be billed for the connection. Currently, only **Yearly/Monthly** is supported.
Region	CN-Hong Kong	Specifies the region where the connection resides. You can also change the region in the upper left corner of the console.
Connection Name	dc-123	Specifies the name of the connection.
Location	HK-Sai Kung-Mobile	Specifies the Direct Connect location where your leased line can be connected to.
Carrier	Other	Specifies the carrier that provides the leased line.
Port Type	1GE single-mode optical port	Specifies the type of the port: 1GE single-mode optical port, 10GE single-mode optical port, 40GE single-mode optical port, or 100GE single-mode optical port.

Parameter	Example Value	Description
Leased Line Bandwidth (Mbit/s)	100	Specifies the bandwidth of the line you need to lease from the carrier.
Equipment Room Address	Room xx, xx building, xx road, xx district, xx city	Specifies the address of your equipment room. The address must be specific to the floor your equipment room is on.
Tag	example_key1 example_value1	Adds tags to help you identify your connection. You can change them after the connection is created.
Description	-	Provides supplementary information about the connection.
Required Duration	3 months	Specifies how long the connection will be used for.
Auto-renew	3 months	Specifies whether to automatically renew the subscription to ensure service continuity. For example, if you select this option and the required duration is three months, the system automatically renews the subscription for another three months.
Enterprise Project	default	Specifies the enterprise project by which connections are centrally managed. Select an existing enterprise project.

e. Click **Confirm Configuration**.

f. Confirm the configuration and click **Request Connection**.

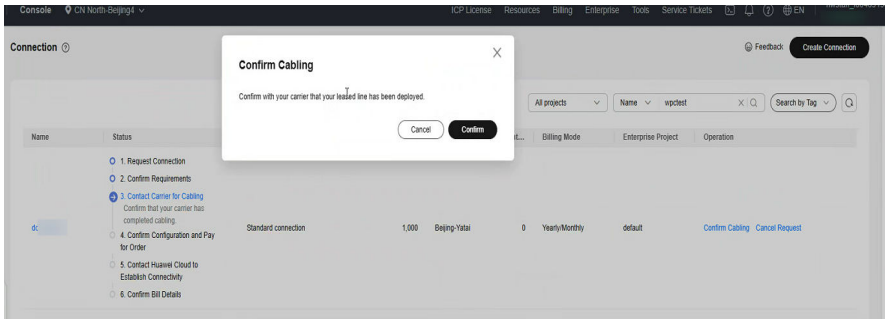
Then confirm the requirements with the Direct Connect manager.

If the request is not approved, repeat **Step 1.1.c** to **Step 1.1.f** based on the review comments and submit the request again.

g. After the request is approved, contact the carrier for cabling.

After the cabling is complete, locate the connection in the connection list and click **Confirm Cabling** in the **Operation** column.

Figure 1-6 Confirm Cabling



h. In the displayed dialog box, click **OK**.

i. In the connection list, locate the connection and click **Confirm Configuration** in the **Operation** column.

j. Confirm the configuration and click **Pay Now**.

k. Confirm the order, select a payment method, and click **Confirm**.

l. Wait for Huawei Cloud to complete the construction.

Huawei onsite engineers will connect the leased line to the port on the Huawei Cloud gateway based on the customer's information within two working days.

m. Verify that the connection is in the **Normal** state, which means that the connection is ready, and the billing starts.

2. Create a virtual gateway.

a. In the navigation pane on the left, choose **Direct Connect** > **Virtual Gateways**.

b. Click **Create Virtual Gateway**.

c. Configure the virtual gateway parameters.

d. Click **OK**.

3. Create a virtual interface.

a. In the navigation pane on the left, choose **Direct Connect** > **Virtual Interfaces**.

b. Click **Create Virtual Interface**.

c. Configure the virtual interface parameters.

d. Click **Create Now**.

Step 2 Create a VPC endpoint service.

1. Hover on ☰ to display **Service List** and choose **Networking** > **VPC Endpoint**.
2. On the displayed page, click **Create VPC Endpoint Service**.
3. Configure the parameters.
4. Click **Create Now**.

NOTE

In this practice, **Connection Approval** is enabled when you create a VPC endpoint service. You need to accept the connection from your purchased VPC endpoint.

Step 3 Buy a VPC endpoint.

1. On the displayed page, click **Buy VPC Endpoint**.
2. Configure the parameters.
3. Click **Next**.
4. Confirm the order details and click **Submit**.
5. Approve the connection.

   Connection Approval is enabled in **Step 2**. If the VPC endpoint status is **Pending acceptance**, perform the following operations to approve the connection to the VPC endpoint service:

   a. Locate the VPC endpoint service and click its name.

   b. On the displayed page, select the **Connection Management** tab.

   c. In the **Operation** column, click **Accept**.

Step 4 (Optional) Verify the connectivity.

- ECS1 in VPC1 can access the on-premises data center.

```
Authorized users only. All activities may be monitored and reported.
ecs1 login: root
Password:
Last login: Wed Nov 10 16:24:52 on tty1

        Welcome to Huawei Cloud Service

[root@ecs1 ~]# ping 10.1.123.1
PING 10.1.123.1 (10.1.123.1) 56(84) bytes of data.
64 bytes from 10.1.123.1: icmp_seq=1 ttl=255 time=255 ms
64 bytes from 10.1.123.1: icmp_seq=2 ttl=255 time=5.41 ms
64 bytes from 10.1.123.1: icmp_seq=3 ttl=255 time=5.27 ms
64 bytes from 10.1.123.1: icmp_seq=4 ttl=255 time=5.42 ms
64 bytes from 10.1.123.1: icmp_seq=5 ttl=255 time=5.70 ms
^C
--- 10.1.123.1 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4006ms
rtt min/avg/max/mdev = 5.274/55.320/254.793/99.736 ms
[root@ecs1 ~]#
```

- The VPC endpoint can access ECS2 in VPC2.

```
Authorized users only. All activities may be monitored and reported.
ecs1 login: root
Password:
Last login: Wed Nov 10 15:04:33 on tty1

        Welcome to Huawei Cloud Service

[root@ecs1 ~]# ssh 192.168.5.111
The authenticity of host '192.168.5.111 (192.168.5.111)' can't be established.
ED25519 key fingerprint is SHA256:X3pVWrivB/uv8UHJ0EZwPggjIz+uEoa7USf6Ix/nH4g.
No matching host key fingerprint found in DNS.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.5.111' (ED25519) to the list of known hosts.

Authorized users only. All activities may be monitored and reported.
root@192.168.5.111's password:

        Welcome to Huawei Cloud Service

Last login: Wed Nov 10 14:54:59 2021 from 198.19.131.4
[root@ecs2 ~]#
```

----End

