Cloud Connect

FAQ

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1 Cloud Connection

1.1 What Can I Do with Cloud Connections?

You can use a cloud connection to:

- Connect VPCs in a single region.
- Connect VPCs in different regions.
- Connect on-premises data centers to VPCs in different regions after you connect the on-premises data centers to the cloud through Direct Connect.
- Reduce the network latency for access to backend services.

For more information, see **Cloud Connection Overview**.

1.2 Can I Use a Cloud Connection Immediately After It Is Created?

Operations on the cloud connections include creating cloud connections, loading network instances, purchasing bandwidth packages, assigning inter-region bandwidths, and applying for a cross-border permit.

- All operations take effect immediately, except the application for the cross-border permit. For details about these operations, see the following:
  - **Creating a Cloud Connection**
  - **Loading a Network Instance**
  - **Buying a Bandwidth Package**
  - **Assigning an Inter-Region Bandwidth**
- The cross-border permit can only take effect after the application is approved by China Unicom. For details, see **Applying for a Cross-Border Permit**.

1.3 What Are the Differences Between Cloud Connections and VPC Peering Connections?

Cloud connections differ from VPC peering connections in the following ways:

- Communication: A VPC peering connection can only connect two VPCs in the same region, but a cloud connect can connect multiple VPCs either in the same region or different regions.

- Network configuration: If you create a VPC peering connection, you need to manually configure routes. If you use a cloud connection, there is no need to configure routes.

- Bearer network: VPC peering connections use the data center network, but cloud connections rely on the Data Center Interconnect (DCI) backbone network.

- Billing: VPC peering connections are free. If you use a cloud connection to connect VPCs in the same region, no billing is involved. If you use a cloud connection to connect VPCs in different regions, you need to purchase bandwidth packages.

Table 1-1 compares these differences.

Table 1-1 Differences between cloud connections and VPC peering connections

Item		VPC Peering Connections	Cloud Connections
Communcatio n	VPCs in the same region	Supported	Supported
	VPCs in different regions	Not supported	Supported
	Cross-border compliance	Not supported	Supported
Network configuration		Manual route configuration	Automatic route configuration
Bearer network		Data center network in the region	Inter-region DCI backbone network
Pricing		Free	Free for connecting VPCs in a region but billed for connecting VPCs in different regions

1.4 What Are the Constraints on Cloud Connections?

When you use cloud connections, note the following:

- The CIDR blocks of the network instances loaded to a cloud connection cannot overlap.

- Each account can create up to six cloud connections. A cloud connection can be used by network instances from up to six regions. In each region, a cloud connection can be used by up to six network instances.

- No more than 50 routes can be configured for a cloud connection in all the regions where the cloud connection is used.

For more information, see **Cloud Connection Overview**.

1.5 Can I Use a Cloud Connection to Connect VPCs in the Same Region?

Yes. After you load the VPCs in the same region to a cloud connection, they can communicate with each other by default. No bandwidth packages are required.

If you require lower network latency, you can connect the VPCs over a VPC peering connect rather than a cloud connection.

1.6 Can I Use a Cloud Connection to Connect VPCs in Different Accounts?

Yes. You can load the VPCs in other accounts to your cloud connection as long as these VPCs have been authorized to you.

For details, see **Authorizing a Network Instance**.

1.7 What If Routes Conflict When I Load a VPC to a Cloud Connection?

When you are loading a VPC, a message "A routing conflict has occurred in this VPC. This route is already being used in other scenarios, such as VPC Peering or VPN." is displayed. If this happens, check whether the VPC is used by:

- A custom route

- Direct Connect

- VPN

- A VPC peering connection

If the VPC is used by any of the above, there may be route conflicts. In this case, disassociate the VPC from the resource and then load the VPC to the cloud connection or select another VPC based on your network plan.

1.8 Can a VPC Be Loaded to Two or More Cloud Connections?

No.

A VPC can only be loaded to one cloud connection.

1.9 Do I Need to Create Another Cloud Connection If Network Instances in One Region Need to Communicate with Network Instances in Two Other Regions That Have Already Been Loaded to a Cloud Connection?

No.

Load the network instances in first region to the cloud connection used by network instances in the other two regions and assign an inter-region bandwidth between each pair of regions.

In this way, network instances in the three regions can communicate with each other.

1.10 What Types of Network Instances Can Be Connected over a Cloud Connection?

A network instance can be a VPC or virtual gateway.

- VPCs can be connected over a cloud connection for communication with each other.
- If VPCs are connected by a cloud connection, virtual gateways associated with each VPC can be loaded to this cloud connection to allow the on-premises data centers to communicate with these VPCs.

1.11 What Tools Can I Use to Verify Network Connectivity After All Configurations Are Complete?

Use ICMP or Telnet to verify that the VPCs in different regions can communicate with each other.

1.12 Do I Need a Bandwidth Package for Verifying Network Connectivity?

Cloud Connect provides you with 10 kbit/s of bandwidth for ping tests.

You do not need to purchase bandwidth packages for communication within a region, but you need to purchase them and assign inter-region bandwidths between regions.

- For details about communication within a region, see **Connecting VPCs in the Same Region**.

- For details about cross-region communication, see **Connecting VPCs in Different Regions**.

1.13 Why Do I Need Cloud Connect If the Network Latency Is the Same as on the Internet?

Consider the following when you are using Cloud Connect:

- **Network performance**
- **Transmission distance**
- **Advantages of Cloud Connect**

Network Performance Measuring Metrics

- Packet loss rate: the proportion of packets lost during network transmission

  This metric measures the network's packet forwarding capabilities. The difference between the number of packets from the sender and the number of packets to the receiver is the number of packets lost during network transmission. The percentage of the packets that are lost is the packet loss rate.

- Jitter: fluctuation in the latency of the packets flowing through the network

  Physical devices, such routers, that forward data packets on the network have buffers. When an amount of data that exceeds the transmission capacity of the cable is transmitted, physical devices will buffer excess packets. Packets that are not buffered or buffered for a short time arrive faster than those buffered for longer. This variation is called network jitter.

- Latency: the average round-trip time for transmitting packets between two network nodes

  For a store-and-forward device, the delay starts when the last bit of the last data frame enters the device and ends when the first bit of the data frame appears on the outbound interface. The time difference is the delay of the storage and forwarding device.

  Generally, there are the following types of delay:

  – Propagation delay: the time taken to transmit a packet in the transmission medium. Propagation delay is directly proportional to the physical distance between the two ends and the packet size. The longer the physical distance and the larger the packet, the longer the transmission delay.

  – Device delay: the time taken by a physical device, such as a router, to forward a data packet. The device delay is related to the forwarding performance of the switching device.

  – Packet conversion delay: the time taken for encoding and decoding data packets at both ends.

> – Jitter buffer delay: Generally, with IP communication for a voice service, a buffer is configured to eliminate the network jitter to prevent the voice quality from being discontinuous. The buffer also causes a certain delay.

Transmission Distance

Cloud Connect uses a DCI backbone network for communication, and the latency depends on the transmission distance and transmission loss.

- A longer distance results in more loss and higher latency.
- A shorter distance results in less loss and lower latency.

☐ NOTE

To ensure connection reliability, inter-region services are usually carried by multiple connections. The length of each connection varies slightly. Therefore, Cloud Connect does not guarantee the latency.

Advantages of Cloud Connect Compared with the Internet

Two scenarios are presented here to compare the network performance of Cloud Connect and the Internet.

Table 1-2 Scenario details

ECS Specification	2 vCPUs and 4-GiB memory
Bandwidth	4 Mbit/s
Regions of the VPCs that need to communicate with each other	CN North-Beijing4 (AZ1) and CN-Hong Kong (AZ1)
	CN East-Shanghai1 (AZ1) and CN-Hong Kong (AZ1)
Test Time	From 18:30 on September 9, 2020 to 09:30 on September 10, 2020 (15 hours in total)
How This Works	Internet: Bind EIPs to the servers in the VPCs. Cloud Connect: Load the VPCs in CN North-Beijing1, CN East-Shanghai1, and CN-Hong Kong to one cloud connection.

Quality of network between CN North-Beijing4 and CN-Hong Kong

Figure 1-1 Internet test results


```
--- XXXXXXXXX ping statistics ---
54663 packets transmitted, 54642 received, 0.0384172% packet loss, time 55669ms
rtt min/avg/max/mdev = 42.692/42.882/179.630/2.105 ms
[root@Server-20f3d5a7-f70b-4c09-8d6d-6fe2ad9541c6 ~]#
```

Figure 1-2 Cloud Connect test results


```
--- XXXXXXXX ping statistics ---
54813 packets transmitted, 54813 received, +54 duplicates, 0% packet loss, time 54899218ms
rtt min/avg/max/mdev = 37.185/38.934/45.419/1.570 ms, pipe 30146
[root@ccglobal-beijing1-az1 tmp]#
```

Table 1-3 Test comparison

Item	Packet Loss	Average Latency	Jitter
Cloud Connect	0%	38.9 ms	1.57 ms
Internet	0.04%	42.882 ms	2.105 ms

Quality of network connection between CN East-Shanghai1 and CN-Hong Kong

Figure 1-3 Internet test results

Figure 1-4 Cloud Connect test results

Table 1-4 Test comparison

Item	Packet Loss	Average Latency	Jitter
Cloud Connect	0%	32.14 ms	0.514 ms
Internet	1.73%	33.24 ms	2.838 ms

You can see from the test results that the performance of Cloud Connect is better than that of the Internet in terms of network latency. Cloud Connect outperforms the Internet in terms of packet loss and jitter.

In summary, Cloud Connect can provide more accurate data transmission and more stable communication.

1.14 What Are the Limits on the Traffic for Cross-Region Communication?

The traffic required when you are using a cloud connection depends on the assigned inter-region bandwidth. The peak inbound or outbound traffic cannot exceed the inter-region bandwidth.

There is no limit on the traffic if the traffic does not exceed the assigned inter-region bandwidth.

For example, if the inter-region bandwidth assigned for communication between regions is 20 Mbit/s, the peak traffic from region A and the peak traffic from region B can reach 20 Mbit/s.

Inter-region bandwidth: 20 Mbit/s

1.15 Why VPCs Communicate with Each Other Across Regions After They Have Been Loaded to a Cloud Connection?

After you complete all the required configuration, you can use ICMP or Telnet to verify network connectivity. If communication fails, do the following to locate the fault:

- Check whether the security group containing the ECSs in the destination VPC allows ICMP or Telnet traffic over the corresponding port in the inbound direction. If ICMP or Telnet traffic is not allowed, the packets will be blocked by the security group.

- Check whether a network ACL is configured for the subnet in the destination VPC to deny traffic from the source VPC. If such an ACL exists, the packets will be blocked by the ACL.

- Check whether there are overlapping subnets in the source and destination VPCs. If they have overlapping subnets, the packets will not be sent to the subnet of the destination VPC.

- Check whether an inter-region bandwidth is assigned between source and destination regions. If you have a bandwidth package but there is no inter-region bandwidth between different regions, the default 10 kbit/s of bandwidth may fail to transmit large ICMP packets or Telnet packets.

1.16 How Do I Add Routes for a Cloud Connection on the Console?

If you load a VPC to a cloud connection, a route is automatically delivered for each subnet you have selected. If you load a virtual gateway to a cloud connection, routes are delivered for the local and remote subnets automatically. If you need a special route, you can add a custom CIDR block when loading the network instance.

You can view the routes in the default route tables of other VPCs loaded to the cloud connection or in the default route tables of the VPCs associated with other virtual gateways loaded to the cloud connection.

1.17 How Can Cloud Connections Offer High Availability?

- To use a cloud connection to connect VPCs in the same region, the underlying clusters for this cloud connection are deployed in different AZs.
- To connect VPCs in different regions, the cloud connect relies on the cloud backbone network, and there are at least two links working in active/standby mode for communication between every two regions.
- There is a dedicated dialing test platform for monitoring the statuses of the underlying clusters and links in real time.

1.18 Are Network Circuits Physically Isolated?

No. Cloud connections rely on the cloud backbone network, and network circuits are logically isolated.

1.19 Do I Need to Bind an EIP to Each ECS in the VPCs Connected over a Cloud Connection?

If the ECSs are used only within the VPCs, no EIPs are required.

If you want to access the ECSs from the Internet or use the ECSs to provide services accessible from the Internet, you need to purchase an EIP for each ECS.

1.20 What Can I Do If the Hybrid Cloud Network Set Up Using Cloud Connect and Direct Connect Is Disconnected?

- Ensure that the route table of your on-premises network has routes to send traffic to cloud resources.
- Ensure that the routes used by the on-premises network are included in the custom CIDR blocks configured for the VPCs connected through a cloud connection and Direct Connect.

2 Cross-Border Permit

2.1 Why Do I Need a Cross-Border Permit?

This is a legal requirement. In accordance with the laws and administrative regulations of the Ministry of Industry and Information Technology (MIIT) of the People's Republic of China, only three major operators in the Chinese mainland are allowed for cross-border communication.

To carry out business outside the Chinese mainland, you need to apply for a cross-border permit from China Unicom because Huawei Cloud cooperates with China Unicom to centrally manage user profiles for cross-border businesses. Huawei Cloud provides cloud services and resources, and China Unicom provides the cross-border circuit services.

2.2 When Would I Need a Cross-Border Permit?

To comply with China's laws and regulations on cross-border communication, you need to apply for a cross-border permit before you can buy a bandwidth package for communication between the Chinese mainland and another country or region. Cloud Connect is now live in four geographic regions, and a cross-border permit is required in the following scenarios:

- Communication between the Chinese mainland and Asia Pacific
- Communication between the Chinese mainland and Southern Africa
- Communication between the Chinese mainland and western Latin America

To apply for a cross-border permit, you need to prepare the required materials stamped with your company's official seal and submit an application. China Unicom will review and approve the application within one working day. After the application is approved, you can buy bandwidth packages.

2.3 How Can I Apply for a Cross-Border Permit?

Procedure

1. Go to the **Bandwidth Packages** page.

2. On the displayed page, click **apply now**.

   If the registered address of your business entity is in the Chinese mainland, click **here** to go to the **Cross-Border Service Application System** page.

   If the registered address of your business entity is outside the Chinese mainland, click **here** to go to the **Cross-Border Service Application System** page.

   📖 **NOTE**

   Select the address for applying for the cross-border permit based on the registration address of your business entity.

3. On the displayed page, select an applicant type, configure the parameters as prompted, and upload the required materials.

   NOTICE

   Prepare and upload the materials required on the application page.

Table 2-1 Online cross-border permit application

Parameter	Description
Applicant Name	The applicant name, which must be the same as the company name in the *Letter of Commitment to Information Security*.
Huawei Cloud UID	The account ID to log in to the management console. You can take the following steps to obtain your account ID. 1. Log in to the management console. 2. Click the username in the upper right corner and select **My Credentials** from the drop-down list. 3. On the **API Credentials** page, obtain the **Account ID**.
Bandwidth (Mbit/s)	For reference only
Start Date	For reference only
Termination Date	For reference only
Customer Type	Select a type based on the actual situation.

Parameter	Description
Country of the Customer	Country where the applicant is located.
Contact Name	-
Contact Number	-
Type of ID	-
ID Number	-
Scope of Business	Briefly describe the main business.
Number of Employees	For reference only
Branch Location Country	Country where the applicant branch is located. Set this parameter based on the actual situation.

Table 2-2 Required materials

Parameter	Description	Required Material	Signature	Seal
Business License	Upload a photo of the business license with the official seal. For the position of the seal, see the template provided by Huawei Cloud.	A scanned copy of your company's business license	-	√
Service Agreement	Download the *Huawei Cloud Cross-Border Circuit Service Agreement*, fill in the blank, upload the copy of agreement with the signature and official seal. ● Sign the material on the signature block. ● Stamp the seal over the signature.	A scanned copy of the *Huawei Cloud Cross-Border Circuit Service Agreement*	√	√

Parameter	Description	Required Material	Signature	Seal
Letter of Commitment to Information Security	Download the *China Unicom Letter of Commitment to Information Security of the Cross-Border Circuit Service*, fill in the blank, and upload the copy of the letter with the signature and seal. • Sign the material on the signature block. • Stamp the seal over the signature. • Specify the bandwidth you estimated and your company name.	A scanned copy of the *China Unicom Letter of Commitment to Information Security of the Cross-Border Circuit Service*	√	√

4.   Click **Submit**.

📖 **NOTE**

> After you submit the application, the status will change to **Pending approval**. The review takes about one working day. When the status changes to **Approved**, you can buy bandwidth packages.

2.4 Who Approves My Application for a Cross-Border Permit?

China Unicom approves the applications and provides you with the cross-border circuit services.

This is because Huawei Cloud cooperates with China Unicom to centrally manage user profiles for cross-border businesses. Huawei Cloud provides cloud services and resources, and China Unicom provides the cross-border circuit services.

2.5 How Long Is My Application for a Cross-Border Permit Approved?

Applications for a cross-border permit are handled within one working day.

After you submit an application, the status will change to **Pending approval**. The review takes about one working day. When the status changes to **Approved**, you can buy bandwidth packages.

2.6 Can I Modify the Content of the *Cross-Border Circuit Service Agreement*?

No.

The *Cross-Border Circuit Service Agreement* is a standard contract confirmed with Shenzhen China Unicom and cannot be modified.

2.7 Does Huawei Cloud Need to Sign and Stamp the Seal on the Materials for Cross-Border Permit Application?

No.

Huawei Cloud works with China Unicom to enable communication across borders. China Unicom provides the network circuit services and reviews and archives the application materials for cross-border permits under the requirements of the Ministry of Industry and Information Technology (MIIT).

2.8 Can I Download the Uploaded Application Materials If They Are Lost Locally?

No.

Keep your application materials safe and secure.

2.9 Why Do I Need to Perform Additional Real-Name Authentication for Cloud Connect Cross-Border Circuit Services Since I Have Performed Real-Name Authentication on Huawei Cloud?

- Huawei Cloud real-name authentication information is used for billing and issuing invoices.
- Cloud Connect's real-name authentication is required for China Unicom to approve your cross-border permit, which is required if you want to access a VPC or on-premises data center outside the Chinese mainland. China Unicom will archive your information for auditing if necessary.

3 Bandwidth Package

3.1 How Many Bandwidth Packages Can Be Bound to a Cloud Connection?

This depends on the billing mode and geographic regions of the bandwidth packages.

- If the billing mode and geographic region are the same, a cloud connection can only have one bandwidth package bound.

  For example, you have created a cloud connection and bound a 50-Mbit/s bandwidth package to the cloud connection for communication within the Chinese mainland. Before you unbind the bandwidth package from the cloud connection, you cannot bind another bandwidth package to the cloud connection for communication within the Chinese mainland. However, you can bind a bandwidth package to the cloud connection for communication in another geographic region or between geographic regions.

- If the billing mode and geographic regions are different, a cloud connection can only have more than one bandwidth package bound.

4 Inter-Region Bandwidth

4.1 Are the Uplink and Downlink Rates of an Inter-Region Bandwidth the Same?

Yes.

If you purchase a 10 Mbit/s bandwidth package for communication between the Chinese mainland and Asia Pacific and assign 5 Mbit/s of bandwidth between the CN East-Shanghai region and the CN-Hong Kong region, the maximum bandwidth from the CN East-Shanghai region to the CN-Hong Kong region and from the CN-Hong Kong region to the CN East-Shanghai region is 5 Mbit/s.

4.2 Why Does the New Inter-Region Bandwidth Not Take Effect Immediately?

You can modify an inter-region bandwidth if it no longer meets your requirements. For details, see **Modifying an Inter-Region Bandwidth**.

It takes about 1 to 2 minutes before the new inter-region bandwidth is applied.

5 Cross-Account Authorization

5.1 Does the Other Account Need to Create a Cloud Connection If I Want to Load the VPCs in That Account to My Cloud Connection?

No.

If you want to load the VPCs in another account to your cloud connection, you only need to ask that account to authorize the desired VPCs. The other account does not need to create a cloud connection in their account.

5.2 Does the Other Account Need to Buy a Bandwidth Package If I Want to Load the VPCs in That Account to My Cloud Connection?

No.

If you want to load the VPCs in another account to your cloud connection, you only need to ask that account to authorize the desired VPCs. The other account does not need to buy a bandwidth package in their account.

6 Monitoring

6.1 How Do I View the Bandwidth Monitoring Data of a Cloud Connection?

- Navigate to the Cloud Eye console, choose **Cloud Service Monitoring** > **Cloud Connect** in the navigation pane, locate the cloud connection, and click **View Metric** in the **Operation** column to view its monitoring data.
- On the **Inter-Region Bandwidths** tab, click the icon in the **Monitoring** column.

  For details, see **Viewing Metrics**.

6.2 Why Is the Cloud Connection Monitoring Data Incomplete on Cloud Eye?

This is because the data has not been collected at one or data collection points, and about 5% of data is lost during data collection. All the data is collected after 2 hours.

6.3 Is There Monitoring Data Immediately After I Assign an Inter-region Bandwidth?

No.

Each time you assign or modify an inter-region bandwidth, data needs to be synchronized. Data synchronization requires about one day. The monitoring data will be updated one day later.

6.4 How Do I View the Inbound and Outbound Bandwidth Monitoring Graphs of a Cloud Connection?

- Outgoing Traffic indicates the traffic from the current region to another region.
- Incoming Traffic indicates the traffic from another region to the current region.

For more metrics, see **Cloud Connection Metrics**.

For details about how to view the inter-region bandwidth monitoring graphs, see **Viewing Cloud Connection Metrics**.