Direct Connect

Getting Started

Issue   01

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Contents

1 Overview

When your on-premises network needs to communicate with a VPC, you can create a Direct Connect connection on the console to establish network connectivity between your premises and the cloud.

📖 **NOTE**

The telecom carrier needs to perform a site survey and lay the leased line, which takes about two or three months. Make sure that you arrange enough time for the project.

Figure 1-1 shows the process for connecting your on-premises environment to Huawei Cloud.

Figure 1-1 Process for establishing network connectivity
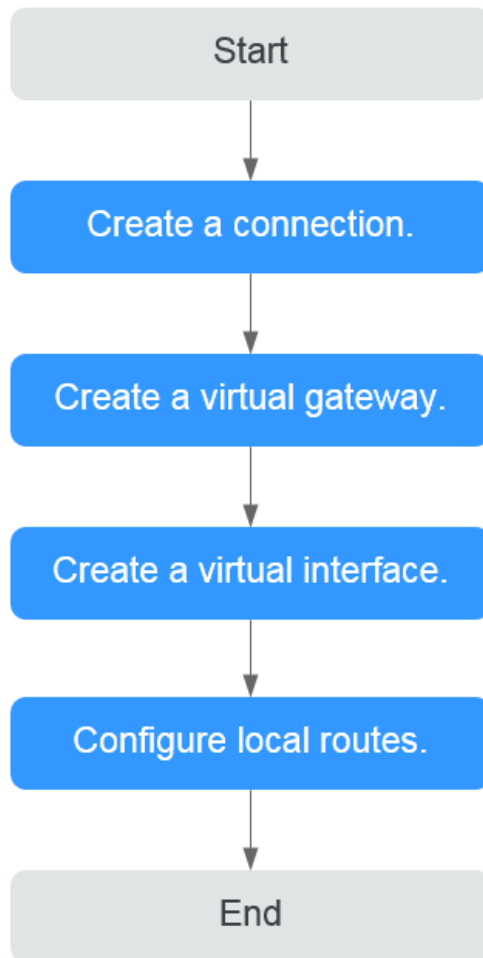
Registering with Huawei Cloud

To access the Direct Connect console, you need an account. If you do not have an account, register one with Huawei Cloud.

1. Visit the **Huawei Cloud official website**.

2. Click **Register** in the upper right corner.

   The registration page is displayed. Enter required information as prompted. After the registration, the system automatically redirects you to your personal information page.

After registration, your account will have permissions to access the Direct Connect service, as well as all other Huawei Cloud services.

Topping Up Your Account

Top up your account to ensure that your account has sufficient balance.

● For details about Direct Connect pricing, see **Product Pricing Details**.

● For details about how to top up an account, see **Topping Up an Account**.

2 Preparations

Before you use Direct Connect to establish connectivity, you need to make preparations, including selecting an appropriate Direct Connect location and consulting the carrier about the site survey.

Selecting a Direct Connect Location

When selecting a location, you need to consider the distance to your on-premises data center, which carrier you want to choose, and which type of port will be used.

- Distance to your on-premises data center

  Select a location nearest to your on-premises data center to reduce network latency. The telecom carriers and bandwidth capabilities vary at different locations.

- Carrier

  Select whichever carrier that can best meet your service requirements. Generally, you can choose one from carriers such as China Unicom, China Telecom, and China Mobile.

- Port type

  Decide what type of port you want to use, an optical port or electrical port.

  - Optical port: The carrier directly provides a fiber optic transmission path for the end user. The port speed is effectively infinite, only limited by the auto-negotiation rate of the optical modules at both ends, for example, 1GE, 10GE, 40GE, and 100GE.

  - Electrical port: Generally, RJ45 ports are used. The carrier uses an optical transceiver to convert electrical signals to optical signals required on the transmission network. The industry standard is to use this type of port when the bandwidth is less than 100 Mbit/s.

    ◻ NOTE

    - Currently, 1GE and 10GE single-mode optical ports can transmit data up to 10 km. If you need an optical port to transmit data for more than 10 km, or you need a 40GE or 100GE port, you need to purchase the optical modules by yourself.

    - Ensure that the leased line provider can provide the optical fibers to connect to Direct Connect devices.

    - No O/E conversion device is allowed on Huawei Cloud. Ensure that the leased line provider uses the correct line type to connect to Direct Connect devices.

To obtain detailed address of a **Direct Connect location**, contact the Direct Connect manager or **submit a service ticket**.

Contacting the Carrier for Site Survey

After you select a location, contact the carrier for a site survey.

1. Consult the carrier about how to access the cloud.

   You can contact the Direct Connect manager or **submit a service ticket** to obtain the detailed address of the equipment room.

2. Submit an application to Huawei Cloud for conducting a site survey in the equipment room.

   The application must include the name, ID card number, and contact information of the personnel who will go to the equipment room for the site survey.

   📖 **NOTE**

   > If the site survey can be completed at the carrier's meet-me room, you do not need to submit an application.

3. After the application is approved, Huawei Cloud will assist the carrier in entering the equipment room for completing the site survey within two working days.

4. Ask the carrier to carry out the site survey and confirm the fees, including the costs of:

   – The port (paid to Huawei Cloud) and one-time setup (free for now)

   – The leased line (paid to the carrier)

   – In-building cabling

3 Step 1: Create a Connection

Figure 3-1 shows how Direct Connect connects your on-premises data center to a VPC.

Figure 3-1 Connecting your on-premises data center to a VPC
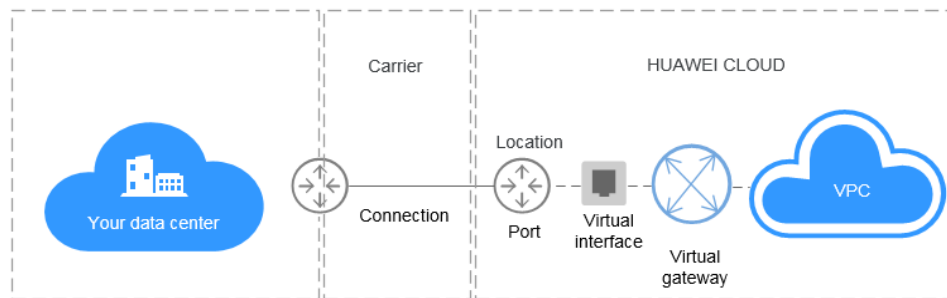
Self-Service Connection

- **Scenario**

  You need to create a connection to connect your on-premises data center to the Direct Connect location you have selected to build a hybrid cloud.

  After you create a connection on the console, Huawei Cloud will provide you with a port for exclusive use. To establish the connection, you need to connect the leased line to the Direct Connect location you have selected. **Figure 3-2** shows the process of connecting your on-premises data center to Huawei Cloud using Direct Connect.

Figure 3-2 Self-service installation process

- **Procedure**

  a. Create a connection.

     i. Log in to the management console.

     ii. On the console homepage, click ![icon] in the upper left corner and select the desired region and project.

     iii. Hover on ![icon] to display **Service List** and choose **Networking** > **Direct Connect**.

     iv. In the navigation pane on the left, choose **Direct Connect** > **Connections**.

     v. Click **Create Connection** in the upper right corner.

     vi. On the **Create Connection** page, enter the equipment room details and select the Direct Connect location and port based on **Table 3-1**.

Figure 3-3 Creating a self-service connection
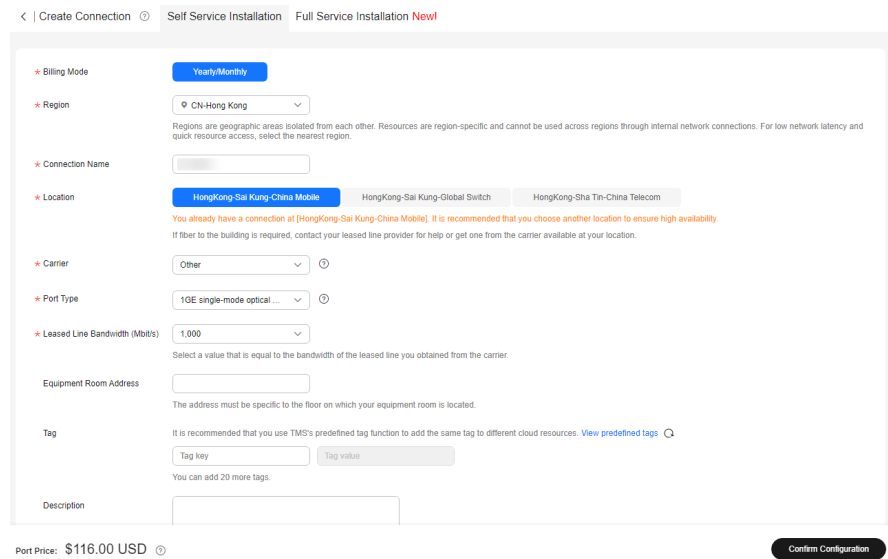
Table 3-1 Parameters required for creating a connection

Parameter	Description
Billing Mode	Specifies how you will be billed for the connection. Currently, only **Yearly/Monthly** is supported.
Region	Specifies the region where the connection resides. You can also change the region in the upper left corner of the console.
Connection Name	Specifies the name of your connection.
Location	Specifies the Direct Connect location where your leased line can be connected to.
Carrier	Specifies the carrier that provides the leased line.
Port Type	Specifies the type of the port that the leased line is connected to: 1GE, 10GE, 40GE, and 100GE.
Leased Line Bandwidth	Specifies the bandwidth of the connection in the unit of Mbit/s. This is the bandwidth of the leased line you bought from the carrier.
Your Equipment Room Address	Specifies the address of your equipment room. The address must be specific to the floor on which your equipment room is located, for example, XX Equipment Room, XX Building, No. XX, Huajing Road, Pudong District, Shanghai.

Parameter	Description
Tag	Identifies the connection. A tag consists of a key and one or more values. You can add 20 tags to a connection. Tag keys and values must meet the requirements listed in **Table 3-2**. **NOTE** If a predefined tag has been created on Tag Management Service (TMS), you can directly select the corresponding tag key and value. For details about predefined tags, see **Predefined Tag Overview**. If you have configured tag policies for Direct Connect, you need to add tags to your connections based on the tag policies. If you add a tag that does not comply with the tag policies, connections may fail to be created. Contact the administrator to learn more about tag policies.
Description	Provides supplementary information about the connection.
Contact Person/ Phone Number/ Email	Specifies who is responsible for your connection. **CAUTION** If you do not provide any contact information, we will contact the person in your account information.
Required Duration	Specifies how long the connection will be used for.
Auto-renew	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	Provides a cloud resource management mode where cloud resources and members are centrally managed by project.

Table 3-2 Tag key and value requirements

Parameter	Requirements
Key	• Cannot be left blank. • Must be unique for each resource. • Can contain a maximum of 36 characters. • Can contain only letters, digits, hyphens, underscores, and Unicode characters from \u4e00 to \u9fff.

Parameter	Requirements
Value	● Can be left blank. ● Can contain a maximum of 43 characters. ● Can contain only letters, digits, period, hyphens, underscores, and Unicode characters from \u4e00 to \u9fff.

      vii. Click **Next**.

      viii. Confirm the connection information and click **Pay Now**.

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

b. Connect your on-premises data center to the cloud.

      i. After you have paid for the order, the system automatically allocates a connection ID for you, and the connection information is displayed on the management console. The connection status is **Creating**, when you will be contacted to confirm the construction plan and relevant information (including your company name, constructor, expected construction time, and construction workers).

      ii. After having confirmed the construction plan, you can arrange the carrier to deploy the dedicated line and connect it to your equipment room based on your construction plan.

      iii. In normal cases, Huawei resident engineers will connect the dedicated line to the Huawei Cloud gateway port within two working days.

      iv. After the construction is complete, the connection status becomes **Normal**, indicating that the connection is ready.

    ☐ **NOTE**

    Create a virtual gateway and associate the virtual gateway with the VPC.

    Create a virtual interface to associate the connection with the created virtual gateway, and connect your on-premises data center to the VPC through the connection.

Full-Service Connection

● **Scenario**

Huawei Cloud completes all operations required for connecting your on-premises data center to the cloud, including integrating the network resources and ports.

Figure 3-4 shows the entire process.

    ☐ **NOTE**

    Full-service connections are now available in the following regions: CN-Hong Kong and CN South-Guangzhou.

Figure 3-4 Full-service installation process
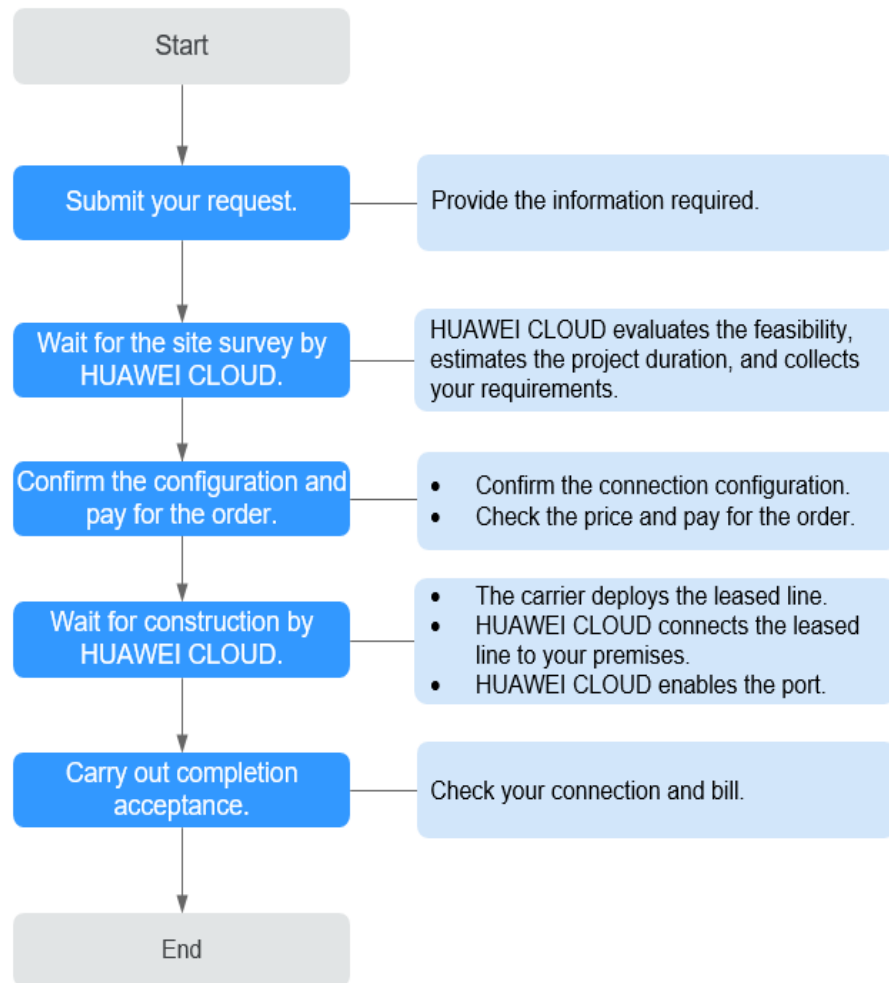
- **Procedure**

  a. Submit your request.

     i. Navigate to the Direct Connect console after login and click **Create Connection**. Click **Full Service Installation** in the navigation bar.

     ii. Provide information about your equipment room and select a Huawei Cloud location. For details about the parameters, see **Table 3-3**.

Figure 3-5 Creating a full-service connection

Table 3-3 Parameter description

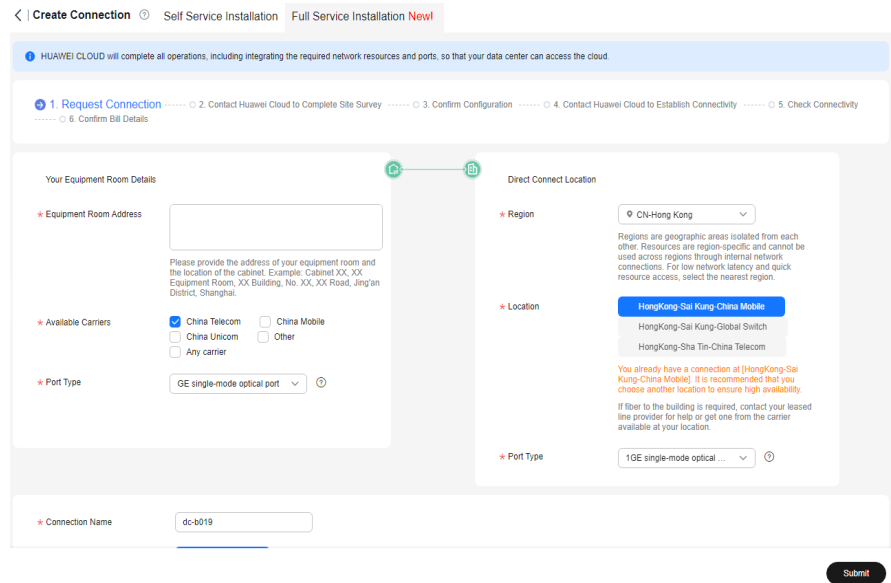| Parameter	Description
Equipment Room Address	Specifies the address of your equipment room. The address must be specific to the room and cabinet number, for example, Cabinet XX, XX Equipment Room, XX Building, No. XX, Huajing Road, Pudong District, Shanghai.
Available Carriers	Specifies the carriers that are allowed to enter your equipment room.
Port Type	Specifies the type of port on the device in your equipment room for connecting to the leased line.
Region	Specifies the region where the connection resides. You can also change the region in the upper left corner of the console.
Location	Specifies the Direct Connect location where your leased line can be connected to.
Port Type	Specifies the type of the port that the leased line is connected to. There are four types of ports: 1GE, 10GE, 40GE, and 100GE.
Connection Name	Specifies the name of your connection.
Leased Line Bandwidth	Specifies the bandwidth of the connection in the unit of Mbit/s.

Parameter	Description
Billing Mode	Specifies how you will be billed for the connection. Currently, only **Yearly/Monthly** is supported.
Required Duration	Specifies how long the connection will be used for.
Enterprise Project	Provides a cloud resource management mode where cloud resources and members are centrally managed by project.
Contact Person	Specifies the name of the person who is responsible for connecting your on-premises data center to the cloud.
Phone Number	Specifies the phone number of the person who is responsible for connecting your on-premises data center to the cloud.
Email	Specifies the email address of the person who is responsible for connecting your on-premises data center to the cloud.

    iii.   Click **Submit**.

  b.   Wait for Huawei Cloud's site survey.

    Huawei Cloud evaluates your requirements and the carrier's resources and confirms whether your requirements can be met. If your requirements can be met, Huawei Cloud will place an order to you.

    📖 NOTE

       Generally, the site survey takes three working days.

  c.   Confirm and pay for the order.

    i.   On the **Connections** page, locate the target connection and click **Confirm Configuration** in the **Operation** column.

    ii.   Confirm the connection configuration and expenses, and then click **Next**.

       📖 NOTE

       You need to read and agree to the **Full-Service Installation Statement** before paying for the order.

    iii.   On the purchase page, select a payment mode and click **Pay**.

       📖 NOTE

       If you select **Download Contract and Pay**, download a contract on the contract page and then request your financial department to process the payment. Discounts, if any, will automatically apply.

  d.   Wait for Huawei Cloud to complete the following work:

    i.   Contacts the carrier to deploy the leased line.

      ii.   Connects your on-premises data center to the cloud using the leased line.

      iii.   Contacts the carrier to complete in-building cabling.

> 📖 **NOTE**
>
> This step is required when you choose a full-service connection with a dedicated port and need cabling for your site.

      iv.   Enables the port.

  e. Confirm that you want to enable Direct Connect.

      i.   On the **Connections** page, locate the target connection and click **Confirm Completion** in the **Operation** column.

      ii.   Click **OK**. Confirm that your connection is available for use, and the billing starts.

4 Step 2: Create a Virtual Gateway

Scenarios

You can create a virtual gateway and associate it with the VPC that you need to access.

Procedure

1. Log in to the management console.

2. On the console homepage, click [icon] in the upper left corner and select the desired region and project.

3. Hover on [icon] to display **Service List** and choose **Networking** > **Direct Connect**.

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

5. Click **Create Virtual Gateway**.

6. Configure the parameters based on **Table 4-1**.

Figure 4-1 Creating a virtual gateway

Table 4-1 Parameters required for creating a virtual gateway

Parameter	Description
Name	Specifies the virtual gateway name. The name can contain 1 to 64 characters.
Enterprise Project	Provides a cloud resource management mode where cloud resources and members are centrally managed by project.
VPC	Specifies the VPC to be associated with the virtual gateway.
Local Subnet	Specifies the CIDR blocks of the subnets in the VPC to be accessed using Direct Connect. You can add one or more CIDR blocks. If there are multiple CIDR blocks, separate every entry with a comma (,).

Parameter	Description
BGP ASN	Specifies the BGP ASN of the virtual gateway. **NOTE** Generally, Huawei Cloud's BGP ASN is 64512. There are two special cases: ● In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533. ● In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.
Tag	Identifies the virtual gateway. A tag consists of a key and one or more values. You can add 20 tags to a virtual gateway. Tag keys and values must meet the requirements listed in **Table 4-2**. **NOTE** If a predefined tag has been created on TMS, you can directly select the corresponding tag key and value. For details about predefined tags, see **Predefined Tag Overview**. If you have configured tag policies for Direct Connect, you need to add tags to your virtual gateways based on the tag policies. If you add a tag that does not comply with the tag policies, virtual gateways may fail to be created. Contact your administrator to learn more about tag policies.
Description	Provides supplementary information about the virtual gateway.

Table 4-2 Tag naming requirements

Parameter	Requirements
Key	● Cannot be left blank. ● Must be unique for each resource. ● Can contain a maximum of 36 characters. ● Can contain only letters, digits, hyphens, and underscores.
Value	● Can be left blank. ● Can contain a maximum of 43 characters. ● Can contain only letters, digits, periods, hyphens, and underscores.

7. Click **OK**.

   Ensure that the virtual gateway is in the **Normal** state.

5 Step 3: Create a Virtual Interface

Scenarios

After the connection and the gateway are ready, you need to create a virtual interface so that your network can access the VPC.

Procedure

1. Log in to the management console.

2. On the console homepage, click in the upper left corner and select the desired region and project.

3. Hover on to display **Service List** and choose **Networking** > **Direct Connect**.

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

5. Click **Create Virtual Interface**.

   Configure the parameters based on **Table 5-1**.

Figure 5-1 Creating a virtual interface
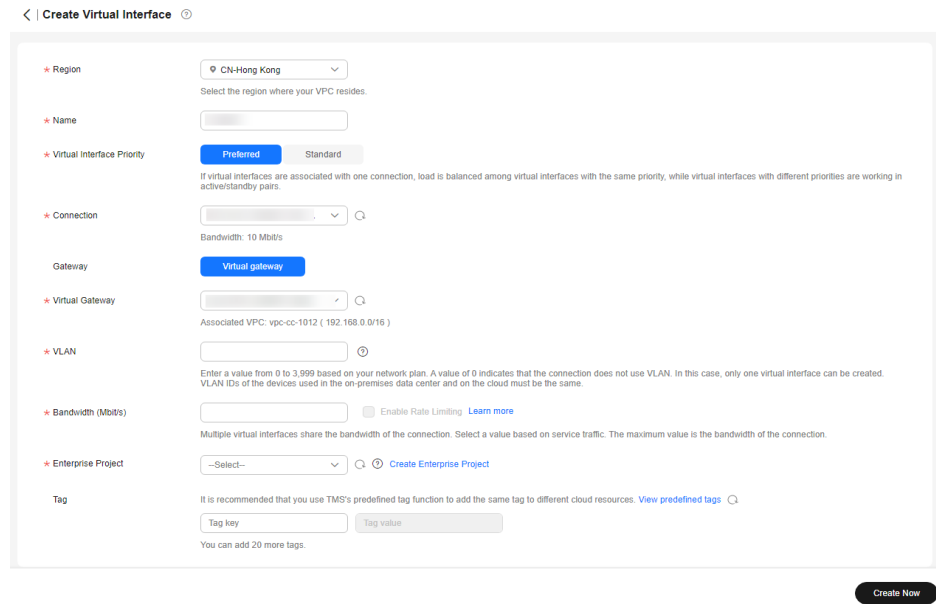
Table 5-1 Parameters for creating a virtual interface

Parameter	Description
Region	Specifies the region where the connection resides. You can also change the region in the upper left corner of the console.
Name	Specifies the virtual interface name. The name can contain 1 to 64 characters.
Virtual Interface Priority	Specifies whether the virtual interface will be used prior to other virtual interfaces. There are two options: **Preferred** and **Standard**. If multiple virtual interfaces are associated with one Direct Connect device, load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
Connection	Specifies the connection you can use to connect your on-premises network to Huawei Cloud.
Virtual Gateway	Specifies the virtual gateway that the virtual interface connects to.
VLAN	Specifies the ID of the VLAN for the virtual interface. You need to configure the VLAN if you create a connection on your own. The VLAN for a hosted connection will be allocated by the carrier or partner. You do not need to configure the VLAN.

Parameter	Description
Bandwidth	Specifies the bandwidth that can be used by the virtual interface, in Mbit/s. The bandwidth cannot exceed that of the connection.
Enable Rate Limiting	Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows: ● If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s. ● If the bandwidth is greater than 100 Mbit/s but is less than or equal to 1,000 Mbit/s, the rate limit gradient is 100 Mbit/s. ● If the bandwidth is greater than 1,000 Mbit/s but is less than or equal to 100 Gbit/s, the rate limit gradient is 1 Gbit/s. ● If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s. For example, if the bandwidth is 52 Mbit/s, the actual rate limit is 60 Mbit/s. If the bandwidth is 115 Mbit/s, the actual rate limit is 200 Mbit/s. **NOTE** Bandwidth limiting of virtual interfaces is being and will be launched in each region. You can view the regions where the option is rolled out on the management console.
Enterprise Project	Provides a cloud resource management mode where cloud resources and members are centrally managed by project.
Tag	Identifies the virtual interface. A tag consists of a key and one or more values. You can add 20 tags to a virtual interface. Tag keys and values must meet the requirements listed in **Table 5-2**. **NOTE** If a predefined tag has been created on TMS, you can directly select the corresponding tag key and value. For details about predefined tags, see **Predefined Tag Overview**. If you have configured tag policies for Direct Connect, you need to add tags to your virtual interfaces based on the tag policies. If you add a tag that does not comply with the tag policies, virtual interfaces may fail to be created. Contact your administrator to learn more about tag policies.
IP Address Family	Specifies the address type of the virtual interface. **IPv4** is selected by default.
Local Gateway	Specifies the gateway on the Huawei Cloud network.

Parameter	Description
Remote Gateway	Specifies the gateway on your on-premises network. The remote gateway must be in the same IP address range as the local gateway. Generally, a subnet with a 30-bit mask is recommended.
Remote Subnet	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.
Routing Mode	Specifies whether static routing or dynamic routing is used to route traffic between your on-premises network and the cloud network. If there are or will be two or more connections, select BGP routing to achieve higher availability.
BGP ASN	Specifies the autonomous system number (ASN) of the BGP peer. This parameter is required when BGP routing is selected.
BGP MD5 Authentication Key	Specifies the password used to authenticate the BGP peer using MD5. This parameter is mandatory when BGP routing is selected, and the parameter values on both gateways must be the same. The key contains 8 to 255 characters and must contain at least two types of the following characters: ● Uppercase letters ● Lowercase letters ● Digits ● Special characters ~!, .:;-_"(){}[]/@#$ %^&*+|=
Description	Provides supplementary information about the virtual interface.

Table 5-2 Tag naming requirements

Parameter	Requirements
Key	● Cannot be left blank. ● Must be unique for each resource. ● Can contain a maximum of 36 characters. ● Can contain only letters, digits, hyphens, and underscores.

Parameter	Requirements
Value	● Can be left blank. ● Can contain a maximum of 43 characters. ● Can contain only letters, digits, periods, hyphens, and underscores.

If you want to create a virtual interface for other accounts, configure the parameters based on **Table 5-3**.

Table 5-3 Parameters for creating a virtual interface for another account

Parameter	Description
Virtual Interface Account	Specifies the account that owns the virtual interface. You create a virtual interface for another account so that this account can use your connection to access the VPC.
Region	Specifies the region where the connection resides. You can also change the region in the upper left corner of the console.
Name	Specifies the virtual interface name. The name can contain 1 to 64 characters.
Virtual Interface Priority	Specifies whether the virtual interface will be used prior to other virtual interfaces. There are two options: **Preferred** and **Standard**. If multiple virtual interfaces are associated with one Direct Connect device, load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
Connection	Specifies the connection you can use to connect your on-premises network to Huawei Cloud.
Project ID	Specifies the ID of the project that the virtual gateway belongs to. On the management console, hover the cursor on the account name in the upper right corner and select **My Credentials**. On the **My Credentials** page, view the project ID.
ID	Specifies the ID of the virtual gateway. In the virtual gateway list, hover the cursor on the virtual gateway name and view the name and ID of the virtual gateway.

Parameter	Description
VLAN	Specifies the ID of the VLAN for the virtual interface. You need to configure the VLAN if you create a self-service connection. The VLAN for a hosted connection will be allocated by the carrier or partner. You do not need to configure the VLAN.
Bandwidth	Specifies the bandwidth that can be used by the virtual interface, in Mbit/s. The bandwidth cannot exceed that of the connection.
Enable Rate Limiting	Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows: ● If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s. ● If the bandwidth is greater than 100 Mbit/s but is less than or equal to 1,000 Mbit/s, the rate limit gradient is 100 Mbit/s. ● If the bandwidth is greater than 1,000 Mbit/s but is less than or equal to 100 Gbit/s, the rate limit gradient is 1 Gbit/s. ● If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s. For example, if the bandwidth is 52 Mbit/s, the actual rate limit is 60 Mbit/s. If the bandwidth is 115 Mbit/s, the actual rate limit is 200 Mbit/s.
Tag	Identifies the virtual interface. A tag consists of a key and one or more values. You can add 20 tags to a virtual interface. Tag keys and values must meet the requirements listed in **Table 5-4**. **NOTE** If a predefined tag has been created on TMS, you can directly select the corresponding tag key and value. For details about predefined tags, see **Predefined Tag Overview**. If you have configured tag policies for Direct Connect, you need to add tags to your virtual interfaces based on the tag policies. If you add a tag that does not comply with the tag policies, virtual interfaces may fail to be created. Contact your administrator to learn more about tag policies.
IP Address Family	Specifies the address type of the virtual interface. **IPv4** is selected by default.
Local Gateway	Specifies the gateway on the Huawei Cloud network.

Parameter	Description
Remote Gateway	Specifies the gateway on your on-premises network. The remote gateway must be in the same IP address range as the local gateway. Generally, a subnet with a 30-bit mask is recommended.
Remote Subnet	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.
Routing Mode	Specifies whether static routing or dynamic routing is used to route traffic between your on-premises network and the cloud network. If there are or will be two or more connections, select BGP routing to achieve higher availability.
BGP ASN	Specifies the ASN of the BGP peer. This parameter is required when BGP routing is selected.
BGP MD5 Authentication Key	Specifies the password used to authenticate the BGP peer using MD5. This parameter is mandatory when BGP routing is selected, and the parameter values on both gateways must be the same. The key contains 8 to 255 characters and must contain at least two types of the following characters: ● Uppercase letters ● Lowercase letters ● Digits ● Special characters ~!, .:;-_"(){}[]/@#$ %^&*+|=
Description	Provides supplementary information about the virtual interface.

Table 5-4 Tag naming requirements

Parameter	Requirements
Key	● Cannot be left blank. ● Must be unique for each resource. ● Can contain a maximum of 36 characters. ● Can contain only letters, digits, hyphens, and underscores.

Parameter	Requirements
Value	● Can be left blank. ● Can contain a maximum of 43 characters. ● Can contain only letters, digits, periods, hyphens, and underscores.

 NOTE

When you configure the local and remote gateways, note the following:

● The local gateway is used by Huawei Cloud for connecting to your equipment room. After you configure **Local Gateway** on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.

● The remote gateway is used by your equipment room for connecting to Huawei Cloud. After you configure **Remote Gateway** on the console, you also need to configure the gateway deployed in your equipment room.

● The local and remote gateways must use the same CIDR block and cannot conflict with service IP addresses on the network.

6. Click **Create Now**.

Ensure that the virtual interface is in the **Normal** state.

7. Ping the IP address of a server in the VPC from your on-premises data center to check network connectivity.

6 Step 4: Configure Routes

After your on-premises network is connected to Huawei Cloud, you need to configure routes in your on-premises data center.

For details about how to configure static routes, see **Accessing a VPC over a Connection That Uses Static Routing**.

For details about how to configure BGP routes, see **Accessing a VPC over a Connection That Uses BGP Routing**.