**Direct Connect** 

#### **Best Practices**

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#### **Contents**

1 Direct Connect Best Practices1
2 Connecting an On-Premises Data Center to a VPC over a Single Connection and Using Static Routing to Route Traffic
3 Connecting an On-Premises Data Center to a VPC over a Single Connection and Using BGP Routing to Route Traffic
4 Connecting an On-Premises Data Center to a VPC over Two Connections in Load Balancing Mode (Virtual Gateway)
5 Connecting an On-Premises Data Center to a VPC over Two Connections in an Active/Standby Pair (Virtual Gateway)46
6 Connecting an On-Premises Data Center to Multiple VPCs that Do Not Need to Communicate with Each Other
7 Connecting an On-Premises Data Center to Multiple VPCs in the Same Region Using Direct Connect and VPC Peering
8 Using a Public NAT Gateway and Direct Connect to Accelerate Internet Access 
9 Allowing On-Premises Servers to Access Cloud Services Using Direct Connect and VPC Endpoint

# Direct Connect Best Practices

Direct Connect establishes high-speed, low-latency, stable, and secure dedicated network connections that connect your on-premises data center to the cloud.

You can use Direct Connect together with other cloud services to set up networks flexibly. You can refer to the best practices provided here for typical networking solutions.

Solution	Example Scenario	Cloud Services	Description
Connectin g an on- premises data center to VPCs in the same region	Using a single Direct Connect connection: Connecting an On-Premises Data Center to a VPC over a Single Connection and Using Static Routing to Route Traffic Connecting an On-Premises Data Center to a VPC over a Single Connection and USING Static Routing an On-Premises Data Center to a VPC over a Single Connection	<ul> <li>Services</li> <li>Direct Connec t</li> <li>VPC</li> <li>ECS</li> </ul>	You can use a single connection with a virtual gateway associated to connect an- premises data center to a VPC and leverage the large bandwidth and private connectivity for fast, secure, stable data transmission
	Routing to Route Traffic		

#### Table 1-1 Scenarios

Solution	Example Scenario	Cloud Services	Description
	Connecting an On-Premises Data Center to a VPC over Two Connections in Load Balancing Mode (Virtual Gateway)	<ul> <li>Direct Connec t</li> <li>VPC</li> <li>ECS</li> </ul>	<ul> <li>To improve the network performance and reliability, you can deploy two connections to connect an on-premises data center to the VPC. The two connections work in load balancing mode.</li> <li>When both connections work normally, the network transmission capability is greatly improved.</li> <li>If one connection becomes faulty, the other connection is not a single point of failure, and your on-premises data center can still access the VPCs.</li> </ul>
	Connecting an On-Premises Data Center to a VPC over Two Connections in an Active/Standby Pair (Virtual Gateway)	<ul> <li>Direct Connec t</li> <li>VPC</li> <li>ECS</li> </ul>	<ul> <li>You want to ensure high reliability of the hybrid cloud network, while enjoying the following benefits:</li> <li>A more cost-effective connection can be used as the standby one to lower costs.</li> <li>The outbound connection is specified, which simplifies O&amp;M.</li> <li>You can create two connections that work in an active/standby pair. If the active connection becomes faulty, the standby one will automatically take over, which minimizes service interruptions.</li> </ul>
	Connecting an On-Premises Data Center to Multiple VPCs that Do Not Need to Communicate with Each Other	<ul> <li>Direct Connec t</li> <li>VPC</li> <li>ECS</li> </ul>	You can create a single standard connection with multiple virtual gateways associated to access different VPCs. This enables end-to-end route isolation for different services.

Solution	Example Scenario	Cloud Services	Description
	Connecting an On-Premises Data Center to Multiple VPCs in the Same Region Using Direct Connect and VPC Peering	<ul> <li>Direct Connec t</li> <li>VPC</li> <li>ECS</li> </ul>	After you connect an on- premises data center to a VPC using Direct Connect, you can use VPC Peering to peer this VPC with other VPCs in the same region, so that the on- premises data center can access all connected VPCs.
Connectin g an on- premises data center to a VPC in the same region using Direct Connect and Enterprise	Setting Up a Hybrid Cloud Network Using Enterprise Router and Direct Connect Global DC Gateway	<ul> <li>Enterprise Router</li> <li>Direct Connect (global DC gatewa y)</li> <li>VPC</li> <li>ECS</li> </ul>	Suppose your enterprise has deployed two VPCs in a region. The two VPCs need to communicate with each other and communicate with your on- premises data center through a global DC gateway.
Router	Setting Up a Hybrid Cloud Network Using Enterprise Router and a Pair of Direct Connect Connections (Global DC Gateway)	<ul> <li>Enterprise Router</li> <li>Direct Connect (global DC gatewa y)</li> <li>VPC</li> <li>ECS</li> </ul>	An enterprise router enables dynamic route selection and switchover between connections that work in load balancing mode. This expands the network bandwidth, increases the network throughput, improves network performance, and ensures high reliability. By attaching global DC gateways to enterprise routers, you can set up a large-scale hybrid cloud network that meets your communication requirements.

Solution	Example Scenario	Cloud Services	Description
	Setting Up a Hybrid Cloud Network Using Enterprise Router and a Pair of Active/Standby Direct Connect Connections (Global DC Gateway)	<ul> <li>Enterprise Router</li> <li>Direct Connect (global DC gatewa y)</li> <li>VPC</li> <li>ECS</li> </ul>	To improve the reliability of the hybrid cloud network and reduce costs, you can create two connections that work in an active/standby pair and use an enterprise router for dynamic route selection and switchover between the connections. If the active connection becomes faulty, the standby one will automatically take over, which minimizes service interruptions.
Using a public NAT gateway and Direct Connect to accelerate Internet access	Using a Public NAT Gateway and Direct Connect to Accelerate Internet Access	<ul> <li>Direct Connec t</li> <li>VPC</li> <li>EIP</li> <li>NAT Gatewa y</li> </ul>	You can use Direct Connect to connect your on-premises data center to the cloud and then buy a public NAT gateway to allow on-premises servers to access the Internet by setting SNAT rules or provide publicly accessible services by setting DNAT rules.
Allowing on- premises servers to access cloud services	Allowing On- Premises Servers to Access Cloud Services Using Direct Connect and VPC Endpoint	<ul> <li>Direct Connec t</li> <li>VPC Endpoi nt</li> </ul>	You can create a connection to connect your on-premises data center to the cloud and then use VPC Endpoint to access cloud services over a private network. This enables faster access and reduces costs.

## **2** Connecting an On-Premises Data Center to a VPC over a Single Connection and Using Static Routing to Route Traffic

#### Overview

Connect your on-premises network to the cloud over a single connection and use static routing to route traffic between your on-premises network and the VPC.

#### Prerequisites

- Your on-premises network must use a single-mode fiber with a 1GE, 10GE, 40GE, or 100GE optical module to connect to the access device in the cloud.
- Auto-negotiation for the port has been disabled. Port speed and full duplex mode have been manually configured.
- 802.1Q VLAN encapsulation is supported on your on-premises network.

#### **Typical Topology**

Your on-premises network is connected to a VPC in the CN-Hong Kong region over a single connection.

For details on how to create a VPC, see the Creating a VPC.

 Table 2-1 lists the CIDR blocks used in this example.

#### Table 2-1 CIDR blocks

ltem	CIDR Block
Your on-premises network	10.1.123.0/24
Local and remote gateways (addresses for interconnection)	10.0.0/30
VPC	192.168.0.0/16



Figure 2-1 Accessing a VPC over a connection through static routes

#### Procedure

**Step 1** Create a connection.

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

#### Figure 2-2 Creating a self-service connection

<	Create Connection ③	Self Service Installation Full Service Installation New!
	1. Request Connection     0 5. Contact Huawei Cloud to	© 2. Confirm Requirements © 3. Contact Carrier for Cabing © 4. Confirm Configuration and Pay for Order > Establish Connectivity © 6. Confirm Bill Details
	It is recommended that you c Direct Connect location or the	reate multiple connections terminated at different Direct Connect locations to ensure 99.95% service availability. The service availability of connections terminated at the same e service availability of a single connection is not within the scope of the SLA. Learn more
	* Billing Mode	YearlyManthy
	* Region	CN-Hong Kong
		Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.
	* Connection Name	
	* Location	HK-Sai Kung-Mobile HK-Tsuen Wan-MEGA HK-Sai Kung-GS HK-Sha Tin-Telecom
		Choose a different location for each connection if you have more than one connection to ensure high availability.
		If fiber to the building is required, contact your leased line provider for help or get one from the carrier available at your location.
	* Carrier	Other v 3
	* Port Type	1GE single-mode optical V 0
	* Leased Line Bandwidth (Mbit/s)	(1,000 ~
		Select a value that is equal to the bandwidth of the leased line you obtained from the carrier.
	Contract Doors Address	
	Equipment Room Address	
		The address must be specific to the floor on which your equipment room is located.
		<u>^</u>
Por	t Price: \$116.00 USD	Confirm Configuration
You	will be charged based on the bill. Price	cing details 🗹

Table 2-2 Parameters for creating a connection

Parameter	Example Value	Description
Billing Mode	Yearly/Monthly	Specifies how you will be billed for the connection. Currently, only <b>Yearly/Monthly</b> is supported.

Parameter	Example Value	Description
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.
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.
Тад	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.

- 5. Click Confirm Configuration.
- 6. Confirm the configuration and click **Request Connection**.

Then confirm the requirements with the Direct Connect manager.

If the request is not approved, repeat **Step 1.3** to **Step 1.6** based on the review comments and submit the request again.

7. 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 2-3 Confirm Cabling

nnection ③		Confirm Cabling		×			Feedback Create Connection
		Confirm with your carrier that your leaded in	e has been deployed.		All projects v	Name 🗸 wpctest	X Q Search by Tag V
Name	Status		Cancel Co	nim it	Billing Mode	Enterprise Project	Operation
d(	1. Request Connection     2. Contim Requirements     3. Contact Carrier for Cabing     Confirm Hall your carrier has     completed cabing.     4. Contim Configuration and Pay     for Order     5. Contact Humel Cloud to     Estable Connective;	Standard connection	1,000 Beşing-Yata	n 0	Yearly:Monthly	default	Continn Catling Cancel Request

- 8. In the displayed dialog box, click **OK**.
- 9. In the connection list, locate the connection and click **Confirm Configuration** in the **Operation** column.
- 10. Confirm the configuration and click **Pay Now**.
- 11. Confirm the order, select a payment method, and click **Confirm**.
- 12. 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.

- 13. Verify that the connection is in the **Normal** state, which means that the connection is ready, and the billing starts.
- **Step 2** Create a virtual gateway.
  - In the navigation pane on the left, choose Direct Connect > Virtual Gateways.
  - 2. Click Create Virtual Gateway.
  - 3. Configure the parameters based on Table 2-3.

Figure 2-4 Creating	a virtual	gateway
---------------------	-----------	---------

Create Virtual G	Sateway	×
★ Name		
★ Enterprise Project	-Select V	Q ⑦ Create Enterprise Project
* VPC	~	Q Create VPC
★ Local Subnet ⑦	Enter one or more subnets using C separate each entry by a comma, f 192.168.52.0/24,192.168.54.0/24.	IDR notation and or example,
BGP ASN	64512	
Tag	It is recommended that you use TMS to different cloud resources. View pre	's predefined tag function to add the same tag $rac{defined}{defined} rac{defi}{Q}$
	Tag key You can add 20 more tags.	Tag value
Description		
		0/128 🍫
		Cancel

#### Table 2-3 Parameters required for creating a virtual gateway

Parameter	Example Value	Description
Name	vgw-123	Specifies the virtual gateway name. The name can contain 1 to 64 characters.
Enterprise Project	default	Specifies the enterprise project by which virtual gateways are centrally managed. Select an existing enterprise project.
VPC	VPC-001	Specifies the VPC to be associated with the virtual gateway.

Parameter	Example Value	Description
Local Subnet	192.168.0.0/16	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 (,).
BGP ASN	64512	Specifies the BGP ASN of the virtual gateway.
		NOTE Generally, Huawei Cloud's BGP ASN is 64512. There are two special cases:
		<ul> <li>In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533.</li> </ul>
		<ul> <li>In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.</li> </ul>
Tag	example_key1 example_value1	Adds tags to help you identify your virtual
		them after the virtual gateway is created.
Description	-	Provides supplementary information about the virtual gateway.

4. Click OK.

**Step 3** Create a virtual interface.

- 1. In the navigation pane on the left, choose **Direct Connect** > **Virtual Interfaces**.
- 2. In the upper right corner, click **Create Virtual Interface**.
- 3. Configure the parameters based on Table 2-4.

#### Figure 2-5 Creating a virtual interface

Create Virtual Interface	
* Virtual Interface Owner	Current account  Another account
* Region	CN-Hong Kong     Salut The noning where were VIID resider.
* Name	
* Virtual Interface Priority	Preferred Standard
+ Connection	If virtual interfaces are associated with one connection, load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/blandby pars.
	Bandwidth: - Mbills
Gateway	Vatual galeway Global DC gateway
* Virtual Gateway	-Select- V Q. Create Virtual Gateway
* VLAN	•
	Enler a value from 0 to 3,999 based on your network plan. A value of 0 indicates that the connection does not use VLAN. In this case, only one virtual interface can be created. VLAN IDs of the devices used in the on-premises data center and on the cloud must be the same.
* Enterprise Project	-Select- V Q O Create Enterprise Project
* Bandwidth (Mbit/s)	Enable Rate Limiting Learn more
1	Multiple virtual interfaces share the bandwidth of the connection. Select a value based on service traffic. The maximum value is the bandwidth of the connection.
Tag	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags
	Tag key Tag value You can add 20 more tags.

#### Table 2-4 Parameters for creating a virtual interface

Parameter	Example Value	Description
Virtual Interface Owner	Current account	Specifies the account that this virtual interface will be created for.
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.
Name	vif-test	Specifies the virtual interface name. The name can contain 1 to 64 characters.

Parameter	Example Value	Description
Virtual Interface Priority	Preferred	Specifies whether the virtual interface will be preferentially used over other virtual interfaces. There are two options: <b>Preferred</b> and <b>Standard</b> .
		If multiple virtual interfaces are associated with one Direct Connect device, the load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
Connection	dc-test12	Specifies the connection you can use to connect your on- premises network to Huawei Cloud.
Gateway	Virtual gateway	Specifies the type of the gateway that the virtual interface connects to.
		You can select a virtual gateway or global DC gateway.
		In this example, select a virtual gateway.
Virtual Gateway	vgw-123	This parameter is mandatory when <b>Gateway</b> is set to <b>Virtual gateway</b> .
		Specifies the virtual gateway that the virtual interface connects to.
Global DC Gateway	dgw-123	This parameter is mandatory when <b>Gateway</b> is set to <b>Global DC gateway</b> .
		Specifies the global DC gateway that the virtual interface connects to.

Parameter	Example Value	Description
VLAN	30	Specifies the ID of the VLAN for the virtual interface.
		<ul> <li>Standard connections: You need to configure the VLAN.</li> </ul>
		<ul> <li>Hosted connections: The VLAN will be allocated by the partner. You do not need to configure the VLAN.</li> </ul>
Bandwidth (Mbit/s)	1,000	Specifies the bandwidth that can be used by the virtual interface. The bandwidth cannot exceed that of the connection.

Parameter	Example Value	Description
Enable Rate Limiting	Not enabled	Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows:
		<ul> <li>If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s.</li> </ul>
		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 rate limiting of virtual interfaces is being and will be launched in each region. You can view the regions where bandwidth rate limiting is rolled out on the management console.
Enterprise Project	default	Specifies the enterprise project by which virtual interfaces are centrally managed. Select an existing enterprise project.

Parameter	Example Value	Description
Tag	-	Adds tags to help you identify your virtual interface. You can change them after the virtual interface is created.
IP Address Family	IPv4	Specifies the address type of the virtual interface.
Local Gateway	10.0.0.1/30	Specifies the IP address used by Huawei Cloud to connect to your on-premises network. After you configure <b>Local Gateway</b> on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.
Remote Gateway	10.0.2/30	Specifies the IP address used by the on-premises data center to connect to Huawei Cloud. After you configure <b>Remote Gateway</b> on the console, you need to configure the IP address on the interface of the on- premises device. <b>CAUTION</b> The IP addresses of the local gateway and remote gateway must be in the same IP address range. Generally, an IP address range with a 30-bit mask is used. The IP addresses you plan cannot conflict with IP addresses used on your on- premises network. Plan an IP address range that will be used at both ends of the connection for network communication between your on-premises data center and the cloud.
Remote Subnet	10.1.123.0/24	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.

Parameter	Example Value	Description
Routing Mode	Static	Specifies whether static routing or dynamic routing is used to route traffic between your on-premises network and the cloud network.
		more connections, select BGP routing for higher availability.
BGP ASN	-	Specifies the ASN of the BGP
		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 can be set 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:
		<ul> <li>Uppercase letters</li> </ul>
		<ul> <li>Lowercase letters</li> </ul>
		– Digits
		– Special characters ~!,.:;- _"(){}[]/@#\$%^&*+\ =
Description	-	Provides supplementary information about the virtual interface.

#### 4. Click Create Now.

**NOTE** 

The default security group rule denies all the inbound traffic. Ensure that security group rules in both directions are correctly configured to ensure normal communications.

**Step 4** Wait for route delivery from the cloud.

Direct Connect automatically delivers the routes after a connection is established between your on-premises network and the cloud network.

**Step 5** Configure routes on your on-premises network device.

Example route (A Huawei-developed device is used an example.) ip route-static 192.168.0.0 255.255.0.0 10.0.0.1

----End

# **3** Connecting an On-Premises Data Center to a VPC over a Single Connection and Using BGP Routing to Route Traffic

#### Overview

Connect your on-premises network to the cloud network and use BGP routes to route traffic between your on-premises network and the VPC.

#### Prerequisites

- Your on-premises network must use a single-mode fiber with a 1GE, 10GE, 40GE, or 100GE optical module to connect to the access device in the cloud.
- Auto-negotiation for the port must be disabled. Port speed and full-duplex mode must be manually configured.
- 802.1Q VLAN encapsulation is supported on your on-premises network.
- On-premises devices must support BGP and cannot use ASN 64512, which is used by Huawei Cloud.

#### **Typical Topology**

Your on-premises network is connected to a VPC in the CN-Hong Kong region over a single connection.

For details on how to create a VPC, see the Creating a VPC.

The following table lists the CIDR blocks used in this example:

Item	CIDR Block
Your on-premises network	10.1.123.0/24
Local and remote gateways (addresses for interconnection)	10.0.0/30
VPC	192.168.0.0/16

#### Table 3-1 CIDR blocks



Figure 3-1 Accessing a VPC over a connection though BGP routes

#### Procedure

**Step 1** Create a connection.

- 1. Go to the **Connections** page.
- 2. In the upper left corner of the page, click 🖸 and select a region and project.
- 3. In the upper right corner, click **Create Connection**.
- 4. On the **Create Connection** page, enter the equipment room details and select the Direct Connect location and port based on **Table 3-2**.

#### Figure 3-2 Creating a self-service connection

1. Request Connection	0 2. Confirm Requirements 0 3. Contact Carrier for Cabling 0 4. Confirm Configuration and Pay for Order	
0 5. Contact Huawei Cloud to	stablish Connectivity 0 6. Contirm Bill Details	
It is recommended that you c Direct Connect location or the	ale multiple connections terminaled at different Direct Connect locations to ensure 99.95% service availability. The service availability of connections terminaled a service availability of a single connection is not within the scope of the SLA. Learn more	t the same
* Billing Mode	YearlyMonthly	
* Region	• CN-Hong Kong	
	Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. I latency and quick resource access, select the nearest region.	for low netw
* Connection Name		
* Location	HK-Sai Kung-Mobile HK-Tsuen Wan-MEGA HK-Sai Kung-GS HK-Sha Tin-Telecom	
	Choose a different location for each connection if you have more than one connection to ensure high availability. If then to the building is consisted, contact your leased line provider for bein or net one from the cartier available at your location.	
* Camer	Other V ()	
* Port Type	1GE single-mode optical V	
* Leased Line Bandwidth (Mbit/s)	1,000 V	
Equipment Room Address		
The address must be specific to the floor on which your equipment room is located.		

Parameter	Example Value	Description
Billing Mode	Yearly/Monthly	Specifies how you will be billed for the connection. Currently, only <b>Yearly/Monthly</b> 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.
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.

 Table 3-2 Parameters for creating a connection

Parameter	Example Value	Description
Enterprise Project	default	Specifies the enterprise project by which connections are centrally managed. Select an existing enterprise project.

#### 5. Click **Confirm Configuration**.

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

Then confirm the requirements with the Direct Connect manager.

If the request is not approved, repeat **Step 1.3** to **Step 1.6** based on the review comments and submit the request again.

7. 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 3-3 Confirm Cabling

Console Q CN	North-Beijing4 v		ICP L	license Resou	irces Billing Enter	prise Tools Service	Tickets ⊡ (↓ (?) ⊕ EN I Innotan_000100
Connection ③		Confirm Cabling		×			Feedback     Create Connection
		Confirm with your carrier that your leased lin	e has been deployed.		All projects $\checkmark$	Name v wpctest	X Q Search by Tag V
Name	Status		Cancel	it	Billing Mode	Enterprise Project	Operation
d;	1 Request Connection     2 Control Requirements     Control Carrier for Cations     Control Carrier for Cations     Control Carrier for Cations     Control Carrier for Cations     Control Comparation and Pay     for Order:     5 Context Human Cloud to     Extediate Aconsectivity     6 Contrim Sill Details	Standard connection	1,000 Beijing Yitla		I YearlyMonthly	default	Centre Cabley Cancel Request

- 8. In the displayed dialog box, click **OK**.
- 9. In the connection list, locate the connection and click **Confirm Configuration** in the **Operation** column.
- 10. Confirm the configuration and click **Pay Now**.
- 11. Confirm the order, select a payment method, and click **Confirm**.
- 12. 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.

- 13. Verify that the connection is in the **Normal** state, which means that the connection is ready, and the billing starts.
- **Step 2** Create a virtual gateway.
  - In the navigation pane on the left, choose Direct Connect > Virtual Gateways.
  - 2. Click Create Virtual Gateway.
  - 3. Configure the parameters based on Table 3-3.

Figure 3-4 Creating	a virtual	gateway
---------------------	-----------	---------

Create Virtual	Sateway	<
★ Name		
★ Enterprise Project	-Select V Q ② Create Enterprise Project	
* VPC	✓ Q Create VPC	
★ Local Subnet 🧿	Enter one or more subnets using CIDR notation and separate each entry by a comma, for example, 192.168.52.0/24, 192.168.54.0/24.	
BGP ASN	64512	
Tag	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags $\ \bar{O}$	
	Tag key         Tag value	
	You can add 20 more tags.	
Description		
	0/128 🦽	
	Cancel	

Table 3-3 Parameters required for creating a virtual gateway

Parameter	Example Value	Description
Name	vgw-123	Specifies the virtual gateway name. The name can contain 1 to 64 characters.
Enterprise Project	default	Specifies the enterprise project by which virtual gateways are centrally managed. Select an existing enterprise project.
VPC	VPC-001	Specifies the VPC to be associated with the virtual gateway.

Parameter	Example Value	Description
Local Subnet	192.168.0.0/16	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 (,).
BGP ASN	64512	<ul> <li>Specifies the BGP ASN of the virtual gateway.</li> <li>NOTE <ul> <li>Generally, Huawei Cloud's BGP ASN is 64512. There are two special cases:</li> <li>In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533.</li> <li>In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.</li> </ul> </li> </ul>
Tag	example_key1 example_value1	Adds tags to help you identify your virtual gateway. You can change them after the virtual gateway is created.
Description	-	Provides supplementary information about the virtual gateway.

4. Click **OK**.

**Step 3** Create a virtual interface.

- 1. In the navigation pane on the left, choose **Direct Connect** > **Virtual Interfaces**.
- 2. In the upper right corner, click **Create Virtual Interface**.
- 3. Configure the parameters based on Table 3-4.

#### Figure 3-5 Creating a virtual interface

<   Create Virtual Interface	0
* Virtual Interface Owner	Current account     Another account
* Region	Ch-Hong Kong
* Name	Select the region where your VP-L resides.
* Virtual Interface Priority	Preferred Standard
* Connection	Il vitual interfacts are associated with one connection, tool is locatived entropy vitual menators with the same priority, where vitual interfacts with therefine the connection  -SelectSelect- Connection Eandwidh: -Mbitis
Gateway	Virtual gateway Global DC gateway
* Virtual Gateway	-Select-  V Q: Create Virtual Gateway
* VLAN	○
	Enter a value from 0 to 3,999 based on your network plan. A value of 0 indicates that the connection does not use VLAN. In this case, only one virtual interface can be created. VLAN IDs of the devices used in the on-premises data center and on the cloud must be the same.
* Enterprise Project	C-Select-
* Bandwidth (Mbit/s)	Enable Rate Limiting Learn more
	Multiple virtual interfaces share the bandwidth of the connection. Select a value based on service traffic. The maximum value is the bandwidth of the connection.
Tag	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags Q
	You can add 20 more tags.
	Create Nov

#### Table 3-4 Parameters for creating a virtual interface

Parameter	Example Value	Description
Virtual Interface Owner	Current account	Specifies the account that this virtual interface will be created for.
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.
Name	vif-test	Specifies the virtual interface name. The name can contain 1 to 64 characters.

Parameter	Example Value	Description
Virtual Interface Priority	Preferred	Specifies whether the virtual interface will be preferentially used over other virtual interfaces. There are two options: <b>Preferred</b> and <b>Standard</b> .
		If multiple virtual interfaces are associated with one Direct Connect device, the load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
Connection	dc-test12	Specifies the connection you can use to connect your on- premises network to Huawei Cloud.
Gateway	vgw-test	Specifies the type of the gateway that the virtual interface connects to.
		You can select a virtual gateway or global DC gateway.
		In this example, select a virtual gateway.
VLAN	30	<ul> <li>Specifies the ID of the VLAN for the virtual interface.</li> <li>Standard connections: You need to configure the VLAN.</li> <li>Hosted connections: The</li> </ul>
		VLAN will be allocated by the partner. You do not need to configure the VLAN.
Bandwidth (Mbit/s)	1,000	Specifies the bandwidth that can be used by the virtual interface. The bandwidth cannot exceed that of the connection.

Parameter	Example Value	Description
Enable Rate Limiting	Not enabled	Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows:
		<ul> <li>If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s.</li> </ul>
		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.
Enterprise Project	default	Specifies the enterprise project by which virtual interfaces are centrally managed. Select an existing enterprise project.
Tag	example_key1 example_value1	Adds tags to help you identify your virtual interface. You can change them after the virtual interface is created.
IP Address Family	IPv4	Specifies the address type of the virtual interface. IPv4 is selected by default.

Parameter	Example Value	Description
Local Gateway	10.0.0.1/30	Specifies the IP address used by Huawei Cloud to connect to your on-premises network. After you configure <b>Local Gateway</b> on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.
Remote Gateway	10.0.0.2/30	Specifies the IP address used by the on-premises data center to connect to Huawei Cloud. After you configure <b>Remote Gateway</b> on the console, you need to configure the IP address on the interface of the on- premises device. <b>CAUTION</b> The IP addresses of the local gateway and remote gateway must be in the same IP address range. Generally, an IP address range with a 30-bit mask is used. The IP addresses you plan cannot conflict with IP addresses used on your on- premises network. Plan an IP address range that will be used at both ends of the connection for network communication between your on-premises data center and the cloud.
Remote Subnet	10.1.123.0/24	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.
Routing Mode	BGP	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
		more connections, select BGP routing for higher availability.

Parameter	Example Value	Description
BGP ASN	64510	Specifies the ASN of the BGP peer. This parameter is required when BGP routing is
		selected.
BGP MD5 Authentication Key	Qaz12345678	Specifies the password used to authenticate the BGP peer using MD5.
		This parameter can be set 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:
		<ul> <li>Uppercase letters</li> </ul>
		<ul> <li>Lowercase letters</li> </ul>
		– Digits
		– Special characters ~!,.:;- _"(){}[]/@#\$%^&*+\ =
Description	-	Provides supplementary information about the virtual interface.

#### 4. Click Create Now.

#### **NOTE**

The default security group rule denies all the inbound traffic. Ensure that security group rules in both directions are correctly configured to ensure normal communications.

Step 4 Wait for route advertisement from the cloud.

Direct Connect automatically delivers the routes after a connection is established between your on-premises network and the cloud network.

**Step 5** Configure routes on your on-premises network device.

Example route (A Huawei-developed device is used an example.)

bgp 64510 peer 10.0.0.1 as-number 64512 peer 10.0.0.1 password simple 1234567 network 10.1.123.0 255.255.255.0

----End

### **4** Connecting an On-Premises Data Center to a VPC over Two Connections in Load Balancing Mode (Virtual Gateway)

#### **Solution Overview**

#### Scenario

Connect your on-premises network to the cloud over two connections that are terminated at different locations in the same region and work in load balancing mode. Use either static or BGP routes to route traffic between your on-premises network and the VPC you want to access.

#### **Solution Architecture**

Your on-premises network is connected to a VPC in the CN-Hong Kong region over two connections, with one terminated at HK-Sha Tin-Telecom and the other terminated at HK-Sai Kung-Mobile.

For details on how to create a VPC, see the Creating a VPC.

The following table lists the CIDR blocks used in this example.

#### Table 4-1 CIDR blocks

Item	CIDR Block
Your on-premises network	10.1.123.0/24
Local and remote gateways (addresses for interconnection)	10.0.0/30 and 10.0.0.4/30
VPC	192.168.0.0/16

**Figure 4-1** Accessing a VPC using two connections that are terminated at two locations and work in load balancing mode



#### Advantages

- Multi-cloud architecture: You can access the cloud from any location that is closer to your on-premises data center or the third-party cloud and use Direct Connect to connect different clouds for backup.
- Secure and reliable: Computing is performed on the clouds with minimum data transmitted over the dedicated network connection, and your core data is still stored in your on-premises data center.

#### Constraints

- Your on-premises network must use a single-mode fiber with a 1GE, 10GE, 40GE, or 100GE optical module to connect to the access device in the cloud.
- Auto-negotiation for the port must be disabled. Port speed and full duplex mode have been manually configured.
- 802.1Q VLAN encapsulation must be supported on your on-premises network.
- If BGP routing is used, on-premises devices must support BGP and cannot use 64512 as the ASN (which has been used by Huawei Cloud).

#### **Resource Planning**

The following table describes the resources required for connecting an onpremises data center to a VPC using two connections that are terminated at different locations and working in load balancing mode.

Region	Resou rce	Description	Quant ity	Price
CN-Hong Kong	VPC	VPC CIDR block: 192.168.0.0/16	1	Free

Table 4-2 Resource planning

Region	Resou rce	Description	Quant ity	Price
	Conne ction	<ul> <li>Connection dc-connect1 is associated with virtual gateway vgw-test and virtual interface vif-test1.</li> <li>Local subnet of virtual gateway vgw-test: 192.168.0.0/16</li> </ul>	2	For details, see Direct Connect Pricing Details.
		<ul> <li>Local gateway of virtual interface vif-test1: 10.0.0.1/30</li> </ul>		
		<ul> <li>Remote gateway of virtual interface vif-test1: 10.0.0.2/30</li> </ul>		
		<ul> <li>Remote subnet of virtual interface vif-test1: 10.1.123.0/24</li> </ul>		
		Connection <b>dc-connect2</b> is associated with virtual gateway <b>vgw-test</b> and virtual interface <b>vif-test2</b> .		
		<ul> <li>Local subnet of virtual gateway vgw-test: 192.168.0.0/16</li> </ul>		
		<ul> <li>Local gateway of virtual interface vif-test2: 10.0.0.5/30</li> </ul>		
		<ul> <li>Remote gateway of virtual interface vif-test2: 10.0.0.6/30</li> </ul>		
		<ul> <li>Remote subnet of virtual interface vif-test2: 10.1.123.0/24</li> </ul>		

#### **Process Flowchart**

In this solution, your on-premises network connects to the cloud over two connections that are terminated at two locations in the same region, and either static or BGP routes are used to route traffic between your on-premises network and the VPC.



#### Procedure

#### **Step 1** Create two connections: **dc-connect1** and **dc-connect2**.

- 1. Go to the **Connections** page.
- 2. In the upper left corner of the page, click **a** and select a region and project.
- 3. In the upper right corner, click **Create Connection**.
- 4. On the **Create Connection** page, enter the equipment room details and select the Direct Connect location and port based on **Table 4-3**.

#### Figure 4-2 Creating a self-service connection

$<$   Create Connection $\odot$	Self Service Installation Full Service Installation New!	
1. Request Connection     0 5. Contact Huawei Cloud to	C 2. Confirm Requirements ······· 3. Contact Carrier for Cabling ······ 4. Confirm Configuration and Pay for Order     stablish Connectivity ····· 6. Confirm Bill Details	
It is recommended that you of Direct Connect location or the	ale multiple connections terminated at different Direct Connect locations to ensure 99 95% service availability. The service availability of connections terminated at the same service availability of a single connection is not within the scope of the SLA. Learn more	
* Billing Mode	YearlyMonthly	
* Region	• CN-Hong Kong V	
	Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.	
* Connection Name		
* Location	HK-Sai Kung-Mobile HK-Tsuen Wan-MEGA HK-Sai Kung-GS HK-Sha Tin-Telecom	
	Choose a different location for each connection if you have more than one connection to ensure high availability. If ther to the building is required, contact your leased line provider for help or get one from the carrier available at your location.	
* Carrier	Other v 3	
* Port Type	1GE single-mode optical $\vee$ $\bigcirc$	
* Leased Line Bandwidth (Mbit/s)	1,000 ~	
	Select a value that is equal to the bandwidth of the leased line you obtained from the carrier.	
Equipment Room Address		
	The address must be specific to the floor on which your equipment room is localed.	
Rot Price: \$116.00 LISD		
You will be charged based on the bill. Price	g details 🕐	

#### Table 4-3 Parameters for creating a connection

Parameter	Example Value	Description
Billing Mode	Yearly/Monthly	Specifies how you will be billed for the connection. Currently, only <b>Yearly/</b> <b>Monthly</b> 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 your connection.
Location	HK-Sha Tin-Telecom	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	Specifies the type of the port that the leased line is connected to: 1GE, 10GE, 40GE, and 100GE.
Parameter	Example Value	Description
-----------------------------------	---	---
Leased Line Bandwidth (Mbit/s)	100	Specifies the bandwidth of the leased line. This is the bandwidth of the leased line you have purchased 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.

#### 5. Click Confirm Configuration.

- Confirm the configuration and click **Request Connection**. Then confirm the requirements with the Direct Connect manager. If the request is not approved, repeat **Step 1.3** to **Step 1.6** based on the review comments and submit the request again.
- 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 4-3 Confirm Cabling

nection ()		Confirm Cabling		×			Feedback     Create Connect
		Confirm with your carrier that your leaded line	e has been deployed.		All projects ~	Name v wpctest	× Q Search by Tag v
Name	Status		Cancel Confirm	,	Billing Mode	Enterprise Project	Operation
dc	Control Connection     Control Requirements     Control Requirements     Control Instruction     Control Instruction Control Control     Control Instruction and Pay for Order     Control Huave Cloud to     Establish Connectivity	Standard connection	1,000 Beijing-Yatai	0	YearlyMonthly	default	Centrm Cabling Cancel Request

- 8. In the displayed dialog box, click **OK**.
- 9. In the connection list, locate the connection and click **Confirm Configuration** in the **Operation** column.
- 10. Confirm the configuration and click **Pay Now**.
- 11. Confirm the order, select a payment method, and click **Confirm**.
- 12. 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.

- 13. Verify that the connection is in the **Normal** state, which means that the connection is ready, and the billing starts.
- 14. Repeat the preceding steps to create connection **dc-connect2** and select **HK-Sai Kung-Mobile** as its location.
- **Step 2** Create a virtual gateway.
  - In the navigation pane on the left, choose Direct Connect > Virtual Gateways.
  - 2. Click Create Virtual Gateway.
  - 3. Configure the parameters based on Table 4-4.

Figure 4-4	Creating a	a virtual	gateway
	J		5

Create Virtual G	Sateway	×
★ Name		
★ Enterprise Project	-Select V	Q ⑦ Create Enterprise Project
* VPC	×	Q Create VPC
★ Local Subnet ⑦	Enter one or more subnets using C separate each entry by a comma, fr 192.168.52.0/24,192.168.54.0/24.	IDR notation and or example,
BGP ASN	64512	
Tag	It is recommended that you use TMS to different cloud resources. View pre Tag key You can add 20 more tags.	as predefined tag function to add the same tag defined tags Q Tag value
Description		0/128 ,2
		Cancel OK

# Table 4-4 Parameters required for creating a virtual gateway

Parameter	Example Value	Description
Name	vgw-123	Specifies the virtual gateway name. The name can contain 1 to 64 characters.
Enterprise Project	default	Specifies the enterprise project by which virtual gateways are centrally managed. Select an existing enterprise project.
VPC	VPC-001	Specifies the VPC to be associated with the virtual gateway.

Parameter	Example Value	Description
Local Subnet	192.168.0.0/16	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 (,).
BGP ASN	64512	Specifies the BGP ASN of the virtual gateway.
		NOTE Generally, Huawei Cloud's BGP ASN is 64512. There are two special cases:
		<ul> <li>In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533.</li> </ul>
		<ul> <li>In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.</li> </ul>
Тад	example_key1	Adds tags to help you
	example_value1	gateway. You can change them after the virtual gateway is created.
Description	-	Provides supplementary information about the virtual gateway.

4. Click OK.

#### Step 3 Create two virtual interfaces: vif-test1 and vif-test2.

Use virtual interface **vif-test1** to connect virtual gateway **vgw-test** and connection **dc-connect1** and connect virtual interface **vif-test2** to connect virtual gateway **vgw-test** and connection **dc-connect2**.

- 1. In the navigation pane on the left, choose **Direct Connect** > **Virtual Interfaces**.
- 2. In the upper right corner, click **Create Virtual Interface**.
- 3. Configure the parameters based on **Table 4-5**.

#### Figure 4-5 Creating a virtual interface

<   Create Virtual Interface	0
* Virtual Interface Owner	Current account     Another account
* Region	Ch-Hong Kong
* Name	Select the region where your VP-L resides.
* Virtual Interface Priority	Preferred Standard
* Connection	Il vitual interfacts are associated with one connection, tool is locatived entropy vitual menators with the same priority, where vitual interfacts with therefine the connection  -SelectSelect- Connection Eandwidh: -Mbitis
Gateway	Virtual gateway Global DC gateway
* Virtual Gateway	-Select-  V Q: Create Virtual Gateway
* VLAN	○
	Enter a value from 0 to 3,999 based on your network plan. A value of 0 indicates that the connection does not use VLAN. In this case, only one virtual interface can be created. VLAN IDs of the devices used in the on-premises data center and on the cloud must be the same.
* Enterprise Project	C-Select-
* Bandwidth (Mbit/s)	Enable Rate Limiting Learn more
	Multiple virtual interfaces share the bandwidth of the connection. Select a value based on service traffic. The maximum value is the bandwidth of the connection.
Tag	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags Q
	You can add 20 more tags.
	Create Nov

#### Table 4-5 Parameters for creating a virtual interface

Parameter	Example Value	Description
Virtual Interface Owner	Current account	Specifies the account that this virtual interface will be created for.
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.
Name	vif-test1	Specifies the virtual interface name. The name can contain 1 to 64 characters.

Parameter	Example Value	Description
Virtual Interface Priority	Preferred	Specifies whether the virtual interface will be preferentially used over other virtual interfaces. There are two options: <b>Preferred</b> and <b>Standard</b> .
		If multiple virtual interfaces are associated with one Direct Connect device, the load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
		Select <b>Preferred</b> for both virtual interfaces.
		For details about the solution using a pair of active/standby connections, see Connecting an On- Premises Data Center to a VPC over Two Connections in an Active/Standby Pair (Virtual Gateway).
Connection	dc-connect1	Specifies the connection you can use to connect your on- premises network to Huawei Cloud.
Gateway	Virtual gateway	Specifies the type of the gateway that the virtual interface connects to.
		You can select a virtual gateway or global DC gateway.
		In this example, select a virtual gateway.
Virtual Gateway	vgw-123	This parameter is mandatory when <b>Gateway</b> is set to <b>Virtual gateway</b> .
		Specifies the virtual gateway that the virtual interface connects to.

Parameter	Example Value	Description
Global DC Gateway	dgw-123	This parameter is mandatory when <b>Gateway</b> is set to <b>Global DC gateway</b> .
		Specifies the global DC gateway that the virtual interface connects to.
VLAN	30	Specifies the ID of the VLAN for the virtual interface.
		You need to configure the VLAN if you create a standard connection.
		The VLAN for a hosted connection will be allocated by the partner. You do not need to configure the VLAN.
Bandwidth (Mbit/s)	1,000	Specifies the bandwidth that can be used by the virtual interface. The bandwidth cannot exceed that of the connection or LAG.

Parameter	Example Value	Description
Enable Rate Limiting	Not enabled	Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows:
		<ul> <li>If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s.</li> </ul>
		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.
		<b>NOTE</b> Bandwidth rate limiting of virtual interfaces is being and will be launched in each region. You can view the regions where bandwidth rate limiting is rolled out on the management console.
Enterprise Project	default	Specifies the enterprise project by which virtual interfaces are centrally managed. Select an existing enterprise project.

Parameter	Example Value	Description
Тад	example_key1 example_value1	Adds tags to help you identify your virtual interface. You can change them after the virtual interface is created.
IP Address Family	IPv4	Specifies the address type of the virtual interface.
		<b>IPv4</b> is selected by default.
Local Gateway	10.0.0.1/30	Specifies the IP address used by Huawei Cloud to connect to your on-premises network. After you configure <b>Local Gateway</b> on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.
Remote Gateway	10.0.2/30	Specifies the IP address used by the on-premises data center to connect to Huawei Cloud. After you configure <b>Remote Gateway</b> on the console, you need to configure the IP address on the interface of the on- premises device. <b>CAUTION</b> The IP addresses of the local gateway and remote gateway must be in the same IP address range. Generally, an IP address range with a 30-bit mask is used. The IP addresses you plan cannot conflict with IP addresses used on your on- premises network. Plan an IP address range that will be used at both ends of the connection for network communication between your on-premises data center and the cloud.
Remote Subnet	10.1.123.0/24	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.

Parameter	Example Value	Description
Routing Mode	BGP	Specifies whether static routing or dynamic routing is used to route traffic between your on-premises network and the cloud network.
BGP ASN	64510	Specifies the ASN of the BGP peer. This parameter is required when BGP routing is selected.
BGP MD5 Authentication Key	Qaz12345678	Specifies the password used to authenticate the BGP peer using MD5. This parameter can be set 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.

#### 4. Click **Create Now**.

5. Repeat **Step 3.1** to **Step 3.4** to create virtual interface **vif-test2**.

**NOTE** 

- When you create virtual interface vif-test2, select connection dc-connect2, and set Local Gateway to 10.0.0.5/30 and Remote Gateway to 10.0.0.6/30.
- Set different BGP ASNs and BGP MD5 authentication keys for the two virtual interfaces.
- The default security group rule denies all the inbound traffic. Ensure that security group rules in both directions are correctly configured to ensure normal communications.

**Step 4** Wait for route delivery from the cloud.

Direct Connect automatically delivers the routes after a connection is established between your on-premises network and the cloud network.

**Step 5** Configure routes on your on-premises network device.

Example static route (A Huawei-developed network device is used as an example.)

ip route-static 192.168.0.0 255.255.0.0 10.0.0.1 ip route-static 192.168.0.0 255.255.0.0 10.0.0.5

Example BGP route (A Huawei-developed network device is used as an example.)

```
bgp 64510
peer 10.0.0.1 as-number 64512
peer 10.0.0.1 password simple Qaz12345678
peer 10.0.0.5 as-number 64512
peer 10.0.0.5 password simple Qaz12345678
network 10.1.123.0 255.255.255.0
```

----End

#### Helpful Links

- For details about how to troubleshoot connection faults, see **Network and Connectivity** and **Routing**.
- For common problems about establishing network connectivity using Direct Connect, see Leased Line.
- For common problems about Direct Connect interconnection, see Interconnection with Cloud.

#### **Connectivity Verification**

Ping an on-premises server from an ECS to verify that they can communicate with each other.

Disable the port for any connection and run the ping command again. If the ECS can still communicate with the on-premises server normally, the on-premises data center can access the cloud privately.

To view the specific path of a route, run the **tracert** command. The command varies according to the device type. For details, contact the device vendor.

CentOS Linux 8 (Core)
Kernel 4, 18, 8-249, 18, 1, e18, 3, x86, 64, on an x86, 64
ecs-dc-test lowin: root
Passiond:
Last login: Fri Jul 30 14:15:12 on ttul
Welcome to Huawei Cloud Service
[rootRecs-dc-test ~]# in ad
1: lo: <loopback.up.lower up=""> mtu 65536 gdisc nogueue state UNKNOWN group default glen 1000</loopback.up.lower>
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00
inet 127, $0.0.1/6$ scope host lo
valid lft forever preferred lft forever
inet6 ::1/128 scope host
valid lft forever preferred lft forever
2: eth0: <broadcast.multicast.up.lower up=""> mtu 1500 gdisc fg codel state UP group default glen 1000</broadcast.multicast.up.lower>
link/ether fa:16:3e:b5:89:93 brd ff:ff:ff:ff:ff:ff
inet 192.168.47.182/16 brd 192.168.255.255 scope global dynamic noprefixroute eth0
walid_lft 31535927sec preferred_lft 31535927sec
inet6 fe80::f816:3eff:feb5:8993/64 scope link
valid_lft forever preferred_lft forever
Eroot@ecs-dc-test ~]# 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=254 time=2.41 ms
64 bytes from 10.1.123.1: icmp_seq=2 ttl=254 time=1.92 ms
64 bytes from 10.1.123.1: icmp_seq=3 ttl=254 time=1.92 ms
64 bytes from 10.1.123.1: icmp_seq=4 ttl=254 time=1.100 ms
64 bytes from 10.1.123.1: icmp_seq=5 ttl=254 time=1.90 ms
64 bytes from 10.1.123.1: icmp_seq=6 ttl=254 time=1.90 ms
64 bytes from 10.1.123.1: icmp_seq=7 ttl=254 time=2.01 ms
64 bytes from 10.1.123.1: icmp_seq=8 ttl=254 time=1.91 ms
64 bytes from 10.1.123.1: icmp_seq=9 ttl=254 time=1.87 ms
64 bytes from 10.1.123.1: icmp_seq=10 ttl=254 time=2.07 ms
64 bytes from 10.1.123.1: icmp_seq=11 ttl=254 time=2.06 ms
64 bytes from 10.1.123.1: icmp_seq=12 ttl=254 time=1.78 ms
64 bytes from 10.1.123.1: icmp_seq=13 ttl=254 time=1.92 ms
by bytes from 10.1.123.1: icmp_seq=14 ttl=254 time=2.20 ms
by bytes from 10.1.123.1: iCmp_seq=15 ttl=254 time=2.09 ms
by bytes from 10.1.123.1: iCmp_seq=16 ttl=254 time=2.04 ms
10.1.123.1 ping statistics
1b packets transmitted, 1b received, 82 packet loss, time 37ms
rtt min/aug/max/mdev = 1.779/1.999/2.406/0.150 ms
Lrootecs-dc-test J# _

# **5** Connecting an On-Premises Data Center to a VPC over Two Connections in an Active/ Standby Pair (Virtual Gateway)

# **Solution Overview**

#### Scenario

You need two connections that are terminated at different Direct Connect locations in the same region to access the same VPC. The two connections work in an active/standby pair.

In this case, it is recommended that you use BGP routing. For the connections from the cloud, you can make them to work in an active/standby pair by setting the virtual interface priority. For the active/standby connections to the cloud, you can set their **Local\_Pref** on your on-premises device.

#### **Solution Architecture**

Your on-premises network is connected to a VPC in the CN-Hong Kong region over two connections, with one terminated at HK-Sha Tin-Telecom and the other terminated at HK-Sai Kung-Mobile.

For details on how to create a VPC, see the Creating a VPC.

The following table lists the CIDR blocks used in this example.

Item	CIDR Block
Your on-premises network	10.1.123.0/24
Local and remote gateways (addresses for interconnection)	10.0.0/30 and 10.0.0.4/30
VPC	192.168.0.0/16

#### Table 5-1 CIDR blocks

**Figure 5-1** Accessing a VPC using two connections that are terminated at two locations and work in an active/standby pair



#### Advantages

Multi-cloud architecture: You can access the cloud from any location that is closer to your on-premises data center or the third-party cloud and use Direct Connect to connect different clouds for backup.

Secure and reliable: Computing is performed on the clouds with minimum data transmitted over the dedicated network connection, and your core data is still stored in your on-premises data center.

#### Constraints

- Your on-premises network must use a single-mode fiber with a 1GE, 10GE, 40GE, or 100GE optical module to connect to the access device in the cloud.
- Auto-negotiation for the port must be disabled. Port speed and full duplex mode have been manually configured.
- 802.1Q VLAN encapsulation must be supported on your on-premises network.
- On-premises devices must support BGP and cannot use ASN 64512, which is used by Huawei Cloud.

#### **Resource Planning**

The following table describes the resources required for connecting an onpremises data center to a VPC using two connections that are terminated at different locations and working in active/standby pair.

Region	Resourc e	Description	Quanti ty	Price
CN- Hong Kong	VPC	VPC CIDR block: 192.168.0.0/16	1	Free

Table	5-2	Resource	planning
10010	-	i cource	praiming

Region	Resourc e	Description	Quanti ty	Price
	Connecti on	Connection <b>dc-connect1</b> is associated with virtual gateway <b>vgw-test</b> and virtual interface <b>vif-test1</b> .	2	For details, see Direct Connect Pricing
		Local subnet of virtual gateway <b>vgw-test</b> : 192.168.0.0/16		Details.
		Local gateway of virtual interface <b>vif-test1</b> : 10.0.0.1/30		
		Remote gateway of virtual interface <b>vif-test1</b> : 10.0.0.2/30		
		Remote subnet of virtual interface <b>vif-test1</b> : 10.1.123.0/24		
		Connection <b>dc-connect2</b> is associated with virtual gateway <b>vgw-test</b> and virtual interface <b>vif-test2</b> .		
		Local subnet of virtual gateway <b>vgw-test</b> : 192.168.0.0/16		
		Local gateway of virtual interface <b>vif-test2</b> : 10.0.0.5/30		
		Remote gateway of virtual interface <b>vif-test2</b> : 10.0.0.6/30		
		Remote subnet of virtual interface <b>vif-test2</b> : 10.1.123.0/24		

# **Process Flowchart**

In this scenario, your on-premises network connects to the cloud over two connections that are terminated at two locations in the same region, and BGP routes are used to route traffic between your on-premises network and the VPC.



# Procedure

#### **Step 1** Create two connections: **dc-connect1** and **dc-connect2**.

- 1. Go to the **Connections** page.
- 2. In the upper left corner of the page, click **a** and select a region and project.
- 3. In the upper right corner, click **Create Connection**.
- 4. On the **Create Connection** page, enter the equipment room details and select the Direct Connect location and port based on **Table 5-3**.

#### Figure 5-2 Creating a self-service connection

<   Create Connection ③	Self Service Installation Full Service Installation New!
1. Request Connection -     0 5. Contact Huawei Cloud to	© 2. Confirm Requirements © 3. Contact Carrier for Cabling © 4. Confirm Configuration and Pay for Order Establish Connectivity © 6. Confirm Bill Details
It is recommended that you on Direct Connect location or the	eale multiple connections terminated at different Direct Connect locations to ensure 99 95% service availability. The service availability of connections terminated at the same service availability of a single connection is not within the scope of the SLA. Learn more
* Billing Mode	VearlyMonthly
* Region	♥ CN-Hong Kong ∨
	Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.
* Connection Name	
* Location	HK-Sai Kung-Mobile HK-Tsuen Wan-MEGA HK-Sai Kung-GS HK-Sha Tin-Telecom
	Choose a different location for each connection if you have more than one connection to ensure high availability. If fiber to the building is required, contact your leased line provider for help or get one from the carrier available at your location.
* Carrier	Other v Ø
* Port Type	16E single-mode opticaL ∨     O
* Leased Line Bandwidth (Mbit/s)	1,000 ~
	Select a value that is equal to the bandwidth of the leased line you obtained from the carrier.
Equipment Room Address	
	The address must be specific to the floor on which your equipment room is located.
Port Price: \$116.00 USD	
You will be charged based on the bill. Price	ing details 🖸

#### Table 5-3 Parameters for creating a connection

Parameter	Example Value	Description		
Billing Mode	Yearly/Monthly	Specifies how you will be billed for the connection. Currently, only <b>Yearly/</b> <b>Monthly</b> 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 your connection.		
Location	HK-Sha Tin-Telecom	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	Specifies the type of the port that the leased line is connected to: 1GE, 10GE, 40GE, and 100GE.		

Parameter	Example Value	Description
Leased Line Bandwidth (Mbit/s)	100	Specifies the bandwidth of the leased line. This is the bandwidth of the leased line you have purchased 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.
		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.

#### 5. Click Confirm Configuration.

- Confirm the configuration and click **Request Connection**. Then confirm the requirements with the Direct Connect manager. If the request is not approved, repeat **Step 1.3** to **Step 1.6** based on the review comments and submit the request again.
- 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 5-3 Confirm Cabling

nection ③		Confirm Cabling		×				Feedback     Create Connect
		Confirm with your carrier that your leaded	ine has been deployed.		ĺ	All projects $\sim$	Name v wpctest	X   Q Search by Tag >
Name	Status		Cancel	Confirm	ıt	Billing Mode	Enterprise Project	Operation
dc	C 1. Request Connection     2. Confirm Requirements     3. Contact Carrier for Cating     Confirm Hall your carrier has     completed cating.     4. Confirm Configuration and Pay     for Order     5. Contact Huanet Cloud to     Estable Connectliny	Standard connection	1,000	Beijing-Yatai	0	YearlyMonthly	default	Contrim Cabling Cancel Request

- 8. In the displayed dialog box, click **OK**.
- 9. In the connection list, locate the connection and click **Confirm Configuration** in the **Operation** column.
- 10. Confirm the configuration and click **Pay Now**.
- 11. Confirm the order, select a payment method, and click **Confirm**.
- 12. 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.

- 13. Verify that the connection is in the **Normal** state, which means that the connection is ready, and the billing starts.
- 14. Repeat the preceding steps to create connection **dc-connect2** and select **HK-Sai Kung-Mobile** as its location.
- **Step 2** Create a virtual gateway.
  - In the navigation pane on the left, choose Direct Connect > Virtual Gateways.
  - 2. Click Create Virtual Gateway.
  - 3. Configure the parameters based on Table 5-4.

Create Virtual G	€ateway	×
★ Name		)
* Enterprise Project	-Select V	Q (2) Create Enterprise Project
* VPC	~	Q Create VPC
★ Local Subnet ⑦	Enter one or more subnets using C separate each entry by a comma, fr 192.168.52.0/24,192.168.54.0/24.	IDR notation and or example,
BGP ASN	64512	
Tag	It is recommended that you use TMS' to different cloud resources. View pre Tag key You can add 20 more tags.	s predefined tag function to add the same tag defined tags Q Tag value
Description		0/128 "
		Cancel

# Table 5-4 Parameters required for creating a virtual gateway

Parameter	Example Value	Description
Name	vgw-123	Specifies the virtual gateway name. The name can contain 1 to
		64 characters.
Enterprise Project	default	Specifies the enterprise project by which virtual gateways are centrally managed. Select an existing enterprise project.
VPC	VPC-001	Specifies the VPC to be associated with the virtual gateway.

Parameter	Example Value	Description
Local Subnet	192.168.0.0/16	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 (,).
BGP ASN	64512	Specifies the BGP ASN of the virtual gateway.
		NOTE Generally, Huawei Cloud's BGP ASN is 64512. There are two special cases:
		<ul> <li>In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533.</li> </ul>
		<ul> <li>In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.</li> </ul>
Тад	example_key1	Adds tags to help you
	example_value1	gateway. You can change them after the virtual gateway is created.
Description	-	Provides supplementary information about the virtual gateway.

4. Click **OK**.

#### Step 3 Create two virtual interfaces: vif-test1 and vif-test2.

Use virtual interface **vif-test1** to connect virtual gateway **vgw-test** and connection **dc-connect1** and virtual interface **vif-test2** to connect virtual gateway **vgw-test** and connection **dc-connect2**. Set different priorities for the two virtual interfaces so the two connections can work in an active/standby pair.

- 1. In the navigation pane on the left, choose **Direct Connect** > **Virtual Interfaces**.
- 2. In the upper right corner, click **Create Virtual Interface**.
- 3. Configure the parameters based on Table 5-5.

#### Figure 5-5 Creating a virtual interface

✓   Create Virtual Interface ⊙		
* Virtual Interface Owner	Current account     Another account	
* Region	• CN-Hong Kong v	
	Select the region where your VPC resides.	
* Name		
* Virtual Interface Priority	Preferred Standard	
	If virtual interfaces are associated with one connection, load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.	
* Connection	-Select V Q Create Connection	
	Bandwidth: Mbit/s	
Gateway	Virtual gateway Global DC gateway	
* Virtual Gateway	Select-	
* VLAN	$\bigcirc$	
	Enter a value from 0 to 3,999 based on your network plan. A value of 0 indicates that the connection does not use VLAN. In this case, only one virtual interface can be created. VLAN IDs of the devices used in the on-premises data center and on the cloud must be the same.	
* Enterprise Project	-Select- V Q 💿 Create Enterprise Project	
* Bandwidth (Mbit/s)	Enable Rate Limiting Learn more	
	Multiple virtual interfaces share the bandwidth of the connection. Select a value based on service traffic. The maximum value is the bandwidth of the connection.	
Tag	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags	
	Tag key Tag value	
	You can add 20 more tags.	
	Condo Neur	

#### Table 5-5 Parameters for creating a virtual interface

Parameter	Example Value	Description
Virtual Interface Owner	Current account	Specifies the account that this virtual interface will be created for.
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.
Name	vif-test1	Specifies the virtual interface name. The name can contain 1 to 64 characters.

Parameter	Example Value	Description
Virtual Interface Priority	Preferred	Specifies whether the virtual interface will be preferentially used over other virtual interfaces. There are two options: <b>Preferred</b> and <b>Standard</b> .
		Virtual interfaces with different priorities are working in active/standby pairs.
		<ul> <li>Select <b>Preferred</b> for the virtual interface associated with the active connection.</li> </ul>
		<ul> <li>Select Standard for the virtual interface associated with the standby connection.</li> </ul>
Connection	dc-connect1	Specifies the connection you can use to connect your on- premises network to Huawei Cloud.
Gateway	Virtual gateway	Specifies the type of the gateway that the virtual interface connects to. You can select a virtual gateway or global DC gateway. In this example, select a virtual gateway.
Virtual Gateway	vgw-123	This parameter is mandatory when <b>Gateway</b> is set to <b>Virtual gateway</b> .
		that the virtual interface connects to.
Global DC Gateway	dgw-123	This parameter is mandatory when <b>Gateway</b> is set to <b>Global DC gateway</b> .
		Specifies the global DC gateway that the virtual interface connects to.

Parameter	Example Value	Description
VLAN	30	Specifies the ID of the VLAN for the virtual interface.
		You need to configure the VLAN if you create a standard connection.
		The VLAN for a hosted connection will be allocated by the partner. You do not need to configure the VLAN.
Bandwidth (Mbit/s)	1,000	Specifies the bandwidth that can be used by the virtual interface. The bandwidth cannot exceed that of the connection or LAG.

Parameter	Example Value	Description
Enable Rate Limiting	Not enabled	Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows:
		<ul> <li>If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>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.</li> </ul>
		<ul> <li>If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s.</li> </ul>
		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 rate limiting of virtual interfaces is being and will be launched in each region. You can view the regions where bandwidth rate limiting is rolled out on the management console.
Enterprise Project	default	Specifies the enterprise project by which virtual interfaces are centrally managed. Select an existing enterprise project.

Parameter	Example Value	Description
Тад	example_key1 example_value1	Adds tags to help you identify your virtual interface. You can change them after the virtual interface is created.
IP Address Family	IPv4	Specifies the address type of the virtual interface.
Local Gateway	10.0.0.1/30	<b>IPv4</b> is selected by default. Specifies the IP address used by Huawei Cloud to connect to your on-premises network. After you configure <b>Local Gateway</b> on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.
Remote Gateway	10.0.2/30	Specifies the IP address used by the on-premises data center to connect to Huawei Cloud. After you configure <b>Remote Gateway</b> on the console, you need to configure the IP address on the interface of the on- premises device. <b>CAUTION</b> The IP addresses of the local gateway and remote gateway must be in the same IP address range. Generally, an IP address range with a 30-bit mask is used. The IP addresses you plan cannot conflict with IP addresses used on your on- premises network. Plan an IP address range that will be used at both ends of the connection for network communication between your on-premises data center and the cloud.
Remote Subnet	10.1.123.0/24	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.

Parameter	Example Value	Description
Routing Mode	BGP	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 for higher availability.
BGP ASN	64510	Specifies the ASN of the BGP peer.
		This parameter is required when BGP routing is selected.
BGP MD5 Authentication Key	Qaz12345678	Specifies the password used to authenticate the BGP peer using MD5.
		This parameter can be set 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:
		<ul> <li>Uppercase letters</li> </ul>
		<ul> <li>Lowercase letters</li> </ul>
		– Digits
		– Special characters ~!,.:;- _"(){}[]/@#\$%^&*+\ =
Description	-	Provides supplementary information about the virtual interface.

#### 4. Click **Create Now**.

5. Repeat steps **3.1** to **3.4** to create virtual interface **vif-test2**.

#### **NOTE**

- When you create virtual interface vif-test2, select connection dc-connect2, and set Local Gateway to 10.0.0.5/30 and Remote Gateway to 10.0.0.6/30.
- Set different BGP ASNs and BGP MD5 authentication keys for the two virtual interfaces.
- The default security group rule denies all the inbound traffic. Ensure that security group rules in both directions are correctly configured to ensure normal communications.

**Step 4** Wait for route delivery from the cloud.

Direct Connect automatically delivers the routes, and the active connection from the cloud has been specified through the priority of the associated virtual interface.

**Step 5** Configure routes on your on-premises network device.

Suppose you want the connection terminated at HK-Sha Tin-Telecom to serve as the active connection to access the cloud, you can set **Local\_Pref** to lower the priority of the BGP routes for the connection terminated at Langfang-Huawei.

Example BGP route (A Huawei-developed network device is used as an example.)

```
bgp 64510
peer 10.0.0.1 as-number 64512
peer 10.0.0.1 password simple Qaz12345678
peer 10.0.0.5 as-number 64512
peer 10.0.0.5 password simple Qaz12345678
peer 10.0.0.5 route-policy slave_direct_in import
network 10.1.123.0 255.255.255.0
route-policy slave_direct_in permit node 10
apply local-preference 90
```

----End

#### **Connectivity Verification**

Ping an on-premises server from an ECS to verify that the ECS can communicate with the on-premises server normally.

Disable the port for any connection and run the ping command again. If the ECS can still communicate with the on-premises server normally, the on-premises data center can access the cloud privately.

To view the specific path of a route, run the **tracert** command. The command varies according to the device type. For details, contact the device vendor.

CentOS Linux 8 (Core) Kernel 4.18.0-240.10:1.e18_3.x86_64 on an x86_64
ecs-dc-test login: root Password: Dest Jenie: Dei Jahl 20.4441542 au dauf
Last login: rri Jul 30 14:15:12 on ttyl Welcome to Huawei Cloud Service
<pre>[root0ecs-dc-test ~]# ip ad 1: lo: <loopback.up.lower_up> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000 link/loopback 00:00:00:00:00:00:00:00:00:00:00:00 inet 127.0.0.1.06 scope host lo     valid_lft forever preferred_lft forever inet6 ::1/128 scope host     valid_lft forever preferred_lft forever</loopback.up.lower_up></pre>
2: eth8: <br0adcast,multicast,up,lower,up> mtu 1500 gdisc fq_codel state UP group default glen 1000 link/ether fa:163:eib5:89:393 bwd ff:ff:ff:ff:ff:ff:ff:ff:ff: inet 192.168.47.182/16 bwd 192.168.255.255 scope global dynamic noprefixroute eth8 valid_lft 31535927sec preferred_lft 31535927sec inet6 fe88::f816:26ff:feb5:19393/64 scope link valid_lft forever preferred_lft forever</br0adcast,multicast,up,lower,up>
FING 18.1.123.1 136.1.123.1 136.041 bytes of data.         64 bytes from 18.1.123.1 136.041 bytes of data.         64 bytes from 18.1.123.1 icmp_seq=1 ttl=254 time=2.41 ms         64 bytes from 18.1.123.1 icmp_seq=3 ttl=254 time=1.92 ms         64 bytes from 18.1.123.1 icmp_seq=3 ttl=254 time=1.92 ms         64 bytes from 18.1.123.1 icmp_seq=4 ttl=254 time=1.92 ms         64 bytes from 18.1.123.1 icmp_seq=4 ttl=254 time=1.100 ms         64 bytes from 18.1.123.1 icmp_seq=5 ttl=254 time=1.100 ms
64 bytes from 10.1.123.1: icmp_seq=6 ttl=254 time=1.90 ms 64 bytes from 10.1.123.1: icmp_seq=7 ttl=254 time=2.01 ms 64 bytes from 10.1.123.1: icmp_seq=8 ttl=254 time=1.91 ms 64 bytes from 10.1.123.1: icmp_seq=9 ttl=254 time=1.07 ms
64 bytes from 18.1.123.1: icmp_seq=10 ttl=254 time=2.87 ms 64 bytes from 18.1.123.1: icmp_seq=11 ttl=254 time=1.68 ms 64 bytes from 18.1.123.1: icmp_seq=12 ttl=254 time=1.78 ms 64 bytes from 18.1.123.1: icmp_seq=13 ttl=254 time=1.92 ms 64 bytes from 18.1.123.1: icmp_seq=13 ttl=254 time=2.92 ms
64 bytes from 10.1.123.1: icmp_seq=15 ttl=254 time=2.09 ms 64 bytes from 10.1.123.1: icmp_seq=16 ttl=254 time=2.04 ms °C === 10.1.123.1 nivg statictics ===
If packets transmitted, 16 received, 0% packet loss, time 37ms rtt min/aug/max/mdev = 1.779/1.999/2.406/0.150 ms [root@ccs-dc-test "]# _

# Helpful Links

- For details about how to troubleshoot connection faults, see Network and Connectivity and Routing.
- For common problems about establishing network connectivity using Direct Connect, see Leased Line.
- For common problems about Direct Connect interconnection, see Interconnection with Cloud.

# **6** Connecting an On-Premises Data Center to Multiple VPCs that Do Not Need to Communicate with Each Other

# Scenario

Connect your on-premises network to two or more VPCs over one connection and use static routes to route traffic between your on-premises network and the VPCs. These VPCs do not need to communicate with each other. In this example, there are two VPCs.

#### **NOTE**

Standard connections are used to provide dedicated ports for exclusive use.

# Prerequisites

- Your on-premises network must use a single-mode fiber with a 1GE, 10GE, 40GE, or 100GE optical module to connect to the access device in the cloud.
- Auto-negotiation for the port must be disabled. Port speed and full-duplex mode must be manually configured.
- 802.1Q VLAN encapsulation is supported on your on-premises network.

# **Typical Topology**

Your on-premises network is connected to two VPCs in the CN-Hong Kong region over a single connection.

For details on how to create a VPC, see the Creating a VPC.

The following table lists the CIDR blocks used in this example.

#### Table 6-1 CIDR blocks

ltem	CIDR Block
Your on-premises network	10.1.123.0/24

Item	CIDR Block
Local and remote gateways (addresses for interconnection)	10.0.0/30 and 10.0.0.4/30
VPCs	VPC-001: 192.168.0.0/16 VPC-002: 172.16.0.0/16

#### Figure 6-1 Accessing multiple VPCs over one connection



# Procedure

**Step 1** Create a connection.

For details, see **Connecting an On-Premises Data Center to a VPC over a Single Connection and Using Static Routing to Route Traffic**.

**Step 2** Create two virtual gateways.

Associate one virtual gateway with VPC-001 and the other one with VPC-002.

#### Figure 6-2 Creating a virtual gateway

Create Virtual C	€ateway	×
★ Name		
* Enterprise Project	-Select V	Q ⑦ Create Enterprise Project
* VPC	~	Q Create VPC
* Local Subnet (?)	Enter one or more subnets using Cl separate each entry by a comma, fr 192.168.52.0/24,192.168.54.0/24.	DR notation and or example,
BGP ASN	64512	
Tag	It is recommended that you use TMS' to different cloud resources. View pre- Tag key You can add 20 more tags.	s predefined tag function to add the same tag defined tags Q Tag value
Description		0/128 🍫
		Cancel OK

#### Table 6-2 Parameters required for creating virtual gateway 1

Parameter	Example Value	Description
Name	vgw-test	Specifies the virtual gateway name. The name can contain 1 to 64 characters.
Enterprise Project	default	Specifies the enterprise project by which virtual gateways are centrally managed. Select an existing enterprise project.
VPC	VPC-001	Specifies the VPC to be associated with the virtual gateway.

Parameter	Example Value	Description
Local Subnet	192.168.0.0/16	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 (,).
BGP ASN	64512	<ul> <li>Specifies the BGP ASN of the virtual gateway.</li> <li>NOTE <ul> <li>Generally, Huawei Cloud's BGP ASN is 64512.</li> <li>There are two special cases:</li> </ul> </li> <li>In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533.</li> <li>In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.</li> </ul>
Tag	example_key1 example_valu e1	Adds tags to help you identify your virtual gateway. You can change them after the virtual gateway is created.
Description	-	Provides supplementary information about the virtual gateway.

#### Figure 6-3 Creating a virtual gateway

Create Virtual C	Sateway	×
* Name		
★ Enterprise Project	Select V	Q ⑦ Create Enterprise Project
* VPC	~	Q Create VPC
★ Local Subnet ⑦	Enter one or more subnets using C separate each entry by a comma, fr 192.168.52.0/24,192.168.54.0/24.	IDR notation and or example,
BGP ASN	64512	
Tag	It is recommended that you use TMS' to different cloud resources. View pre Tag key You can add 20 more tags.	s predefined tag function to add the same tag defined tags Q Tag value
Description		0/128 🏑
		Cancel OK

#### **Table 6-3** Parameters required for creating virtual gateway 2

Parameter	Example Value	Description
Name	vgw-c413	Specifies the virtual gateway name. The name can contain 1 to 64 characters.
Enterprise Project	default	Specifies the enterprise project by which virtual gateways are centrally managed. Select an existing enterprise project.
VPC	VPC-001	Specifies the VPC to be associated with the virtual gateway.
Local Subnet	172.16.0.0/16	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	Example Value	Description		
BGP ASN	64512	Specifies the BGP ASN of the virtual gateway.		
		NOTE Generally, Huawei Cloud's BGP ASN is 64512. There are two special cases:		
		<ul> <li>In the CN North-Beijing1 region, the default BGP ASN of Huawei Cloud is 65533.</li> </ul>		
		<ul> <li>In the AP-Bangkok region, the BGP ASN of some Direct Connect locations is 65535 by default. For details, contact the Direct Connect manager.</li> </ul>		
Tag	example_key2 example_value 2	Adds tags to help you identify your virtual gateway. You can change them after the virtual gateway is created.		
Description	-	Provides supplementary information about the virtual gateway.		

#### **Step 3** Create two virtual interfaces.

Connect each virtual interface with a virtual gateway associated so that your onpremises network can access **VPC-001** through 10.0.0/30 and **VPC-002** through 10.0.0.4/30.

#### Figure 6-4 Creating a virtual interface

Virtual Interface Owner	Current account     Another account
Region	♥ CN-Hang Kong ∨
	Select the region where your VPC resides.
Name	
Virtual Interface Priority	Preferred Standard
	If virtual interfaces are associated with one connection, load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
Connection	-Select- V Q. Create Connection
	Bandwidth: Mbil/s
Gateway	Virtual gateway Global DC gateway
Virtual Gateway	-Select- Virtual Gateway
VLAN	•
	Enter a value from 0 to 3,999 based on your network plan. A value of 0 indicates that the connection does not use VLAN. In this case, only one virtual interface can be created. VLAN IDs of the devices used in the on-premises data center and on the cloud must be the same.
Enterprise Project	-Select- V Q (2) Create Enterprise Project
Bandwidth (Mbit/s)	Enable Rate Limiting Learn more
	Multiple virtual interfaces share the bandwidth of the connection. Select a value based on service traffic. The maximum value is the bandwidth of the connection.
Тад	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags (),
	Tag key Tag value
	You can add 20 more tags.

Parameter	Example Value	Description
Virtual Interface Owner	Current account	Specifies the account that this virtual interface will be created for.
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.
Name	vif-test	Specifies the virtual interface name. The name can contain 1 to 64 characters.
Virtual Interface Priority	Preferred	Specifies whether the virtual interface will be preferentially used over other virtual interfaces. There are two options: <b>Preferred</b> and <b>Standard</b> .
		If multiple virtual interfaces are associated with one Direct Connect device, the load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
Connection	dc-test12	Specifies the connection you can use to connect your on-premises network to Huawei Cloud.
Gateway	Virtual gateway	Specifies the type of the gateway that the virtual interface connects to. You can select a virtual gateway or global DC gateway. In this example, select a virtual gateway.
Virtual Gateway	vgw-123	Specifies the virtual gateway that the virtual interface connects to. This parameter is mandatory when <b>Gateway</b> is set to <b>Virtual gateway</b> .
Global DC Gateway	dgw-123	Specifies the global DC gateway that the virtual interface connects to. This parameter is mandatory when <b>Gateway</b> is set to <b>Global DC gateway</b> .

	Table 6-4 Parameters	required	for creating	virtual interfa	ce 1
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Parameter	Example Value	Description			
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VLAN	30	<ul> <li>Specifies the ID of the VLAN for the virtual interface.</li> <li>Standard connections: You need to configure the VLAN.</li> <li>Hosted connections: The VLAN will be allocated by the partner. You do not need to configure the VLAN.</li> </ul>			
Bandwidth (Mbit/s)	500	Specifies the bandwidth that can be used by the virtual interface. The bandwidth cannot exceed that of the connection.			
Enable Rate Limiting	Not enabled	<ul> <li>Limits the highest bandwidth that can be used by the virtual interface. If this option is enabled, the rate limit gradients are as follows:</li> <li>If the bandwidth is less than or equal to 100 Mbit/s, the rate limit gradient is 10 Mbit/s.</li> <li>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.</li> <li>If the bandwidth is greater than 1,000 Mbit/s but is less than or equal to 1,000 Mbit/s.</li> <li>If the bandwidth is greater than 1,000 Mbit/s.</li> <li>If the bandwidth is greater than 1,000 Mbit/s, the rate limit gradient is 100 Mbit/s.</li> <li>If the bandwidth is greater than 1,000 Gbit/s, the rate limit gradient is 1 Gbit/s.</li> <li>If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s.</li> <li>For example, if the bandwidth is 52 Mbit/s, the actual rate limit is 200 Mbit/s.</li> <li>If the bandwidth is 115 Mbit/s, the actual rate limit is 200 Mbit/s.</li> </ul>			
Enterprise	default	console. Specifies the enterprise project by which			
Project		virtual interfaces are centrally managed. Select an existing enterprise project.			
Tag	example_key1 example_value1	Adds tags to help you identify your virtual interface. You can change them after the virtual interface is created.			

Direct Connect
Best Practices

Parameter	Example Value	Description	
IP Address Family	IPv4	Specifies the address type of the virtual interface.	
		<b>IPv4</b> is selected by default.	
Local Gateway	10.0.0.1/30	Specifies the IP address used by Huawei Cloud to connect to your on-premises network. After you configure <b>Local</b> <b>Gateway</b> on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.	
Remote Gateway	10.0.0.2/30	Specifies the IP address used by the on- premises data center to connect to Huawei Cloud. After you configure <b>Remote Gateway</b> on the console, you need to configure the IP address on the interface of the on-premises device. <b>CAUTION</b> The IP addresses of the local gateway and remote gateway must be in the same IP address range. Generally, an IP address range with a 30-bit mask is used. The IP addresses you plan cannot conflict with IP addresses used on your on-premises network. Plan an IP address range that will be used at both ends of the connection for network communication between your on-premises data center and the cloud.	
Remote Subnet	10.1.123.0/24	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.	
Routing Mode	Static	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 for higher availability.	
BGP ASN	-	Specifies the ASN of the BGP peer.	
		This parameter is required when BGP routing is selected.	

Parameter	Example Value	Description
BGP MD5 Authentication	-	Specifies the password used to authenticate the BGP peer using MD5.
Кеу		This parameter can be set 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
		<ul> <li>Special characters ~!,.:;"(){}[]/@#\$ %^&amp;*+\ =</li> </ul>
Description	-	Provides supplementary information about the virtual interface.

#### Figure 6-5 Creating a virtual interface

+ Virtual Interface Owner	
* Viitual Intenace Owner	Current account     Another account
* Region	♥ CN-Hong Kong ∨
	Select the region where your VPC resides.
* Name	
* Virtual Interface Priority	Preferred Standard
	If virtual interfaces are associated with one connection, load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/standby pairs.
* Connection	-Select- V Q. Create Connection
	Bandwidth: Mbit/s
Gateway	Virtual gateway Global DC gateway
* Virtual Gateway	-Select- V Q. Create Virtual Gateway
* VLAN	0
	Enter a value from 0 to 3,999 based on your network plan. A value of 0 indicates that the connection does not use VLAN. In this case, only one virtual interface can be created. VLAN IDs of the devices used in the on-premises data center and on the cloud must be the same.
* Enterprise Project	-Select- V Q. ③ Create Enterprise Project
* Bandwidth (Mbit/s)	Enable Rate Limiting Learn more
	Multiple virtual interfaces share the bandwidth of the connection. Select a value based on service traffic. The maximum value is the bandwidth of the connection.
Тад	It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags
	Tag key Tag value
	You can add 20 more tags.

#### Table 6-5 Parameters required for creating virtual interface 2

Parameter	Example Value	Description
Virtual Interface Owner	Current account	Specifies the account that this virtual interface will be created for.

Parameter	Example Value	Description
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.
Name	vif-c413	Specifies the virtual interface name.
		The name can contain 1 to 64 characters.
Virtual Interface Priority	Preferred	Specifies whether the virtual interface will be preferentially used over other virtual interfaces. There are two options: <b>Preferred</b> and <b>Standard</b> .
		If multiple virtual interfaces are associated with one Direct Connect device, the load is balanced among virtual interfaces with the same priority, while virtual interfaces with different priorities are working in active/ standby pairs.
Connection	dc-test12	Specifies the connection you can use to connect your on-premises network to Huawei Cloud.
Gateway	Virtual gateway	Specifies the type of the gateway that the virtual interface connects to.
		You can select a virtual gateway or global DC gateway.
		In this example, select a virtual gateway.
Virtual Gateway	vgw-123	This parameter is mandatory when Gateway is set to Virtual gateway.
		Specifies the virtual gateway that the virtual interface connects to.
Global DC Gateway	dgw-123	Specifies the global DC gateway that the virtual interface connects to.
		This parameter is mandatory when Gateway is set to Global DC gateway.
VLAN	31	Specifies the ID of the VLAN for the virtual interface.
		<ul> <li>Standard connections: You need to configure the VLAN.</li> </ul>
		• Hosted connections: The VLAN will be allocated by the partner. You do not need to configure the VLAN.
Bandwidth (Mbit/s)	500	Specifies the bandwidth that can be used by the virtual interface. The bandwidth cannot exceed that of the connection.

Parameter	Example Value	Description
Enable Rate Limiting	Not enabled	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.
		<ul> <li>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.</li> </ul>
		<ul> <li>If the bandwidth is greater than 100 Gbit/s, the rate limit gradient is 10 Gbit/s.</li> </ul>
		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.
		<b>NOTE</b> Bandwidth rate limiting of virtual interfaces is being and will be launched in each region. You can view the regions where bandwidth rate limiting is rolled out on the management console.
Enterprise Project	default	Specifies the enterprise project by which virtual interfaces are centrally managed. Select an existing enterprise project.
Tag	example_key2 example_value 2	Adds tags to help you identify your virtual interface. You can change them after the virtual interface is created.
IP Address Family	IPv4	Specifies the address type of the virtual interface.
		<b>IPv4</b> is selected by default.
Local Gateway	10.0.0.5/30	Specifies the IP address used by Huawei Cloud to connect to your on-premises network. After you configure <b>Local</b> <b>Gateway</b> on the console, the configuration will be automatically delivered to the gateway used by Huawei Cloud.

Parameter	Example Value	Description
Remote Gateway	10.0.0.6/30	Specifies the IP address used by the on- premises data center to connect to Huawei Cloud. After you configure <b>Remote</b> <b>Gateway</b> on the console, you need to configure the IP address on the interface of the on-premises device. <b>CAUTION</b> The IP addresses of the local gateway and
		remote gateway must be in the same IP address range. Generally, an IP address range with a 30- bit mask is used. The IP addresses you plan cannot conflict with IP addresses used on your on-premises network. Plan an IP address range that will be used at both ends of the connection for network communication between your on- premises data center and the cloud.
Remote Subnet	10.1.123.0/24	Specifies the subnets and masks of your on-premises network. If there are multiple subnets, use commas (,) to separate them.
Routing Mode	Static	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 for higher availability.
BGP ASN	-	Specifies the ASN of the BGP peer.
		This parameter is required when BGP routing is selected.
BGP MD5 Authentication	-	Specifies the password used to authenticate the BGP peer using MD5.
Кеу		This parameter can be set 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
		<ul> <li>Digits</li> <li>Special characters ~!,;"(){}[]/@#\$ %^&amp;*+\ =</li> </ul>
Description	-	Provides supplementary information about the virtual interface.

#### **NOTE**

The default security group rule denies all the inbound traffic. Ensure that security group rules in both directions are correctly configured to ensure normal communications.

**Step 4** Wait for route delivery from the cloud.

Direct Connect automatically delivers the routes after a connection is established between your on-premises network and the cloud network.

**Step 5** Configure routes on your on-premises network device.

Example route (A Huawei-developed device is used an example.)

ip route-static 192.168.0.0 255.255.0.0 10.0.0.1 ip route-static 172.16.0.0 255.255.0.0 10.0.0.5

----End

# Connecting an On-Premises Data Center to Multiple VPCs in the Same Region Using Direct Connect and VPC Peering

## Scenario

Connect your on-premises network to the cloud and use VPC Peering to connect the VPCs in the same region so that your on-premises network can access all these VPCs.

The CIDR block of each VPC must be unique.

# **Typical Topology**



## Procedure

- Step 1 Configure Direct Connect to connect your on-premises data center to VPC A.
  - 1. Create a connection.
  - 2. Create a virtual gateway.

When creating the virtual gateway, select VPC A and add the CIDR block of VPC B to the local subnet.

3. Create a virtual interface.

**Step 2** Create a VPC peering connection between VPC A and VPC B.

- 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. Click to display Service List and choose Networking > Virtual Private Cloud.
- 4. In the navigation pane on the left, click **VPC Peering Connections**.
- 5. Click Create VPC Peering Connection.
- 6. Configure the parameters based on **Table 7-1**.

Figure 7-1 Creating a VPC peering connection

<				
Basic Configuration				
Region V				
VPC Peering Connection Name				
Description (Optional) Enter a description.				
0255.4				
Local VPC Settings				
Local VPC v				
Local VPC CIDR Block				
Peer VPC Settings				
Account My account				
Peer Project V				
If you select My account, the project is filled in by default.				
Peer VPC V				
Peer VPC CIDR Block				

#### Table 7-1 Parameters required for creating a VPC peering connection

Parameter	Example Value	Description
Region	CN-Hong Kong	Region where the VPC peering connection will be used.
		Region where the supplementary network interface will be created. Select the region nearest to you to ensure the lowest latency possible.

Parameter	Example Value	Description
VPC Peering Connection Name	peering-001	Specifies the name of the VPC peering connection. The name contains a maximum of 64 characters, which consist of letters, digits, hyphens (-), and underscores (_).
Description	-	Provides supplementary information about the VPC peering connection.
Local VPC	VPC B	Specifies the local VPC. Select <b>VPC B</b> from the drop- down list.
Local VPC CIDR Block	192.168.2.0/24	Specifies the CIDR block of the local VPC.
Account	My account	<ul> <li>Specifies whether the VPC to peer with is from your account or another user's account.</li> <li>My account: The VPC peering connection will connect two VPCs in your account.</li> <li>Another account: The VPC peering connection will connect your VPC to another VPC in another account.</li> </ul>
Peer Project	ap-southeast-1	The project is selected in by default if <b>Account</b> is set to <b>My account</b> . In this example, VPC A and VPC B are created in region A, and the corresponding project of the account in region A is selected by default.
Peer VPC	VPC A	Specifies the peer VPC. Select <b>VPC A</b> from the drop- down list.

Parameter	Example Value	Description
Peer VPC CIDR Block	192.168.10.0/24	Specifies the CIDR block of the peer VPC.
		The local and peer VPCs cannot have matching or overlapping CIDR blocks. Otherwise, the routes added for the VPC peering connection may not take effect.

7. Click **OK**.

**Step 3** Add routes for the VPC peering connection.

- 1. Under Networking, click Virtual Private Cloud.
- 2. In the navigation pane on the left, click **VPC Peering Connections**.
- 3. Locate the VPC peering connection in the connection list.
- 4. Click the name of the VPC peering connection to switch to the page showing details about the connection.
- 5. Click the **Local Routes** tab.
- 6. Add routes in the default route table. For details about the parameters, see **Table 7-2**.

Parameter	Example Value	Description
VPC	VPC B	Specifies a VPC that is connected by the VPC peering connection.

Parameter	Example Value	Description
Route Table	rtb-VPC-B (default)	Specifies the route table of the VPC. The routes will be added to this route table.
		Each VPC comes with a default route table to control the outbound traffic from the subnets in the VPC. In addition to the default route table, you can also create a custom route table and associate it with the subnets in the VPC. Then, the custom route table controls outbound traffic of the subnets.
		<ul> <li>If there is only the default route table in the drop- down list, select the default route table.</li> </ul>
		<ul> <li>If there are both default and custom route tables in drop-down list, select the route table associated with the subnet connected by the VPC peering connection.</li> </ul>
Destination	VPC A CIDR block: 192.168.10.0/24	Specifies the CIDR block of the peer VPC, a subnet, or the private IP address of an ECS in the peer VPC.
		For details, see VPC Peering Connection Examples.
Next Hop	peering-001	The default value is the current VPC peering connection. You do not need to specify this parameter.
Description	-	(Optional) Provides supplementary information about the route.
		Enter up to 255 characters. Angle brackets (< or >) are not allowed.

Parameter	Example Value	Description
Add a route for the other VPC	Selected	If you select this option, you can also add a route for the other VPC connected by the VPC peering connection. To enable communications between VPCs connected by a VPC peering connection, you need to add forward and return routes to the route tables of the VPCs.
VPC	VPC A	By default, the other VPC connected by the VPC peering connection is selected. You do not need to specify this parameter.
Route Table	rtb-VPC-A (default)	<ul> <li>Specifies the route table of the VPC. The routes will be added to this route table.</li> <li>Each VPC comes with a default route table to control the outbound traffic from the subnets in the VPC. In addition to the default route table, you can also create a custom route table and associate it with the subnets in the VPC. Then, the custom route table controls outbound traffic of the subnets.</li> <li>If there is only the default route table in the drop-down list, select the default route table.</li> <li>If there are both default and custom route tables in drop-down list, select the route table and custom route tables in drop-down list, select the route table and custom route tables in drop-down list, select the route table associated with the subnet connected by the VPC peering connection.</li> </ul>
Destination	VPC B CIDR block: 192.168.2.0/24	IP address in the VPC at the other end of the VPC peering connection. The value can be VPC CIDR block, subnet CIDR block, or ECS IP address.

Parameter	Example Value	Description
Next Hop	peering-001	The default value is the current VPC peering connection. You do not need to specify this parameter.
Description	-	(Optional) Provides supplementary information about the route.
		Enter up to 255 characters. Angle brackets (< or >) are not allowed.

### 7. Click OK.

You can view the route in the route list.

----End

# 8 Using a Public NAT Gateway and Direct Connect to Accelerate Internet Access

You can use Direct Connect to connect your on-premises data center to the cloud and then buy a public NAT gateway to allow on-premises servers to access the Internet or provide publicly accessible services. Use SNAT rules to allow onpremises servers to send outbound traffic to the Internet, while preventing the Internet from establishing connections to the servers. Use DNAT rules to allow a service in the on-premises network to be publicly accessible. This is widely used in scenarios such as gaming, e-commerce, and finance.

For details, see Using a Public NAT Gateway and Direct Connect to Accelerate Internet Access.

# **9** Allowing On-Premises Servers to Access Cloud Services Using Direct Connect and VPC Endpoint

Create a Direct Connect connection to connect your on-premises data center to the cloud and then use VPC Endpoint to access cloud services over a private network. This makes access faster and reduces costs.

For details, see Using VPC Endpoint and Direct Connect to Enable On-Premises Data Centers to Access Cloud Services.