

Alibaba Cloud Express Connect

Tutorials

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 Note: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus, page names, and other UI elements.	Click OK .
Courier font	It is used for commands.	Run the <code>cd /d C:/windows</code> command to enter the Windows system folder.
<i>Italics</i>	It is used for parameters and variables.	<code>bae log list --instanceid Instance_ID</code>
[] or [a b]	It indicates that it is a optional value, and only one item can be selected.	<code>ipconfig [-all -t]</code>
{ } or {a b}	It indicates that it is a required value, and only one item can be selected.	<code>swich {stand / slave}</code>

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1 Establish an intranet connection between VPCs under the same account

This tutorial illustrates how to use Express Connect to connect two VPCs under the same account.

Example

The following are two VPCs used in this tutorial.

Configuration	VPC1	VPC2
VPC ID	vpc-12345678	vpc-87654321
Region	China (Beijing)	China (Hangzhou)
VPC CIDR Block	192.168.0.0/16	172.16.0.0/12
VSwitch CIDR block	192.168.100.0/24	172.16.100.0/24

Prerequisites

Make sure that the CIDR blocks of the VPCs or VSwitches to be interconnected do not conflict with each other.

Step 1: Create router interfaces

Follow these steps to create router interfaces:

1. Log on to the [Express Connect console](#).
2. In the left-side navigation pane, click **VPC Connection > Router Interface**.
3. In the upper-right corner, click **Create Router Interface**.
4. Select router interface configurations and complete the payment.


This tutorial uses the following configurations.

- **Scenario:** Select **VPC Interconnection**.
- **Router Creation:** Select **Create Initiator and Receiver**. The system sets the router interface of the local side as the initiator, and automatically connects the initiator to the receiver.
- **Local Region:** Select the region where the VPC is located. In this tutorial, select **China (Beijing)**.
- **VPC ID:** Select the VPC to be connected. In this tutorial, select **VPC1**.


- **Peer Region:** Select the region where the peer VPC is located. In this tutorial, select **China (Hangzhou)**.
- **Peer VPC ID:** Select the peer VPC to be connected. In this tutorial, select **VPC2**.
- **Specification:** Select the specification for the initiator. In this tutorial, select **Large 1**.

After the router interfaces are created, the system automatically initiates the connection between the router interfaces.

- Initiator router interface

VPC Peering Connections									
Create Peering Connection		Refresh		Instance Name		Enter			
Monitor	Initiator	Initiator Region	Acceptor	Acceptor Region	Belong to Same Account	Specification	Billing Method	Status	
	vpc-m5e2htpw ri-m5eqzozh Route Settings	China North 1 (Qingdao)	Add Acceptor	China North 2 (Beijing)	No	Small.1	Pay-As-You-Go Created at Sep 28, 2018, 15:35:19	● Initiator: Disconnected ● Acceptor: Disconnected	


- Receiver router interface

VPC Peering Connections									
Create Peering Connection		Refresh		Instance Name		Enter			
Monitor	Initiator	Initiator Region	Acceptor	Acceptor Region	Belong to Same Account	Specification	Billing Method	Status	
	Add Initiator	China North 1 (Qingdao)	vpc-2zeimsh ri-2zeix2q86 Route Settings	China North 2 (Beijing)	Yes	Default	Pay-As-You-Go Created at Sep 27, 2018, 18:17:01	● Initiator: Disconnected ● Acceptor: Disconnected	

Step 2: Configure the routes

After creating the router interfaces, follow these steps to configure routes for the two VPCs:

1. On the Router Interface page, find the target route interface and click **Route Configuration**.

VPC Peering Connections									
Create Peering Connection		Refresh		Instance Name		Enter			
Monitor	Initiator	Initiator Region	Acceptor	Acceptor Region	Belong to Same Account	Specification	Billing Method	Status	
	vpc-m5e2htpw ri-m5e33r3n78z Route Settings	China North 1 (Qingdao)	vpc-2zeimsh ri-2zeix2q86	China North 2 (Beijing)	No	Mini.2	Subscription Expires at Oct 28, 2018, 00:00:00 Connected at Sep 28, 2018, 16:14:00	● Initiator: Activated ● Acceptor: Activated	

2. On the **VRouter** page, click **Add Route Entry** in the upper-right corner.
3. In the displayed dialog box, configure the route entry as follows:
 - **Destination CIDR Block:** The CIDR Block of the peer VPC or VSwitch.
 - **Next Hop Type:** Select **Router Interface**.
 - **Router Interface:** Select **General Routing** and select a router interface.
4. Repeat the preceding steps to configure the route for the VPC to which the other router interface belongs.

In this tutorial, the route configurations are as follows:

Destination CIDR Block	Next Hop Type	Description
172.16.100.0/24 (VSwitch CIDR block of VPC2)	Router interface of VPC1	Route table configuration of VPC1
192.168.100.0/24 (VSwitch CIDR block of VPC1)	Router interface of VPC2	Route table configuration of VPC2

2 Establish an intranet connection between VPCs under different accounts

This tutorial illustrates how to use Express Connect to connect two VPCs under different accounts.

Example

The following are two VPCs used in this tutorial.

Configuration	Account A	Account B
VPC ID	vpc-12345678 (VPC A)	vpc-87654321 (VPC B)
Region	China (Beijing)	China (Hangzhou)
Router ID	vrt-AAA	1vrt-BBB
VPC CIDR Block	192.168.0.0/16	172.16.0.0/12
VSwitch CIDR Block	192.168.100.0/24	172.16.100.0/24

Prerequisites

- The Alibaba Cloud account IDs and router IDs of the two parties have been obtained.
- The VSwitch CIDR blocks of the two VPCs cannot conflict with each other.

Step 1: Create the initiator

Follow these steps to create the initiator router interface in the VPC under account A:

1. Log on to the [Express Connect console](#).
2. In the left-side navigation pane, click **VPC Connection > Router Interface**.
3. Click **Create Router Interface**.
4. Configure the router interface.


In this tutorial, the following configurations are used:

- **Scenario:** Select **VPC Interconnection**.
- **Router Creation:** Select **Create Initiator**.
- **Local Region:** Select the region where the VPC is located. In this tutorial, select **China (Beijing)**.
- **VPC ID:** Select the VPC to be connected. In this tutorial, select the ID of VPC A.
- **Peer Region:** Select the region where the peer VPC is located. In this tutorial, select **China (Hangzhou)**.

- **Specification:** Select the specification for the initiator. In this tutorial, select **Large 1**.

5. Click **Buy Now** to complete the creation.

Then go back to the **Router Interface** page after about one minute. Select China (Beijing) region. Then you can see the router interface of account A. In this tutorial, ri-AAA is used to represent the router interface ID of account A.

<div>Create Peering Connection</div> <div>Refresh</div>								<div>Instance Name</div> <div>Enter</div>		
Monitor	Initiator	Initiator Region	Acceptor	Acceptor Region	Belong to Same Account	Specification	Billing Method	Status	Actions	
	vpc-m5e2htpw ri-m5e33r3n78z - p1	China North 1 (Qingdao)	vpc-2zeimshn ri-2zeiv2q96ux	China North 2 (Beijing)	No	Mini.2	Subscription Expires at Oct 28, 2018, 00:00:00 Connected at Sep 28, 2018, 16:14:00	<div><div></div> Initiator: Activated</div> <div><div></div> Acceptor: Activated</div>	<div></div>	
	Route Settings									

Step 2: Create the receiver

Follow these steps to create the receiver router interface in the VPC under account B:

1. Log on to the [Express Connect console](#).
2. In the left-side navigation pane, click **VPC Connection > Router Interface**.
3. Click **Create Router Interface**.
4. Configure the router interface.

In this tutorial, the following configurations are used:

- **Scenario:** Select **VPC Interconnection**.
 - **Router Creation:** Select **Create Receiver**.
 - **Local Region:** Select the region where the VPC is located. In this tutorial, select **China (Hangzhou)**.
 - **VPC ID:** Select the VPC to be connected. In this tutorial, select the ID of VPC B.
 - **Peer Region:** Select the region where the peer VPC is located. In this tutorial, select **China (Beijing)**.
5. Click **Buy Now** to complete the creation.

Then go back to the **Router Interface** page after about one minute. Select the China (Hangzhou) region. Then you can see the router interface of account B. In this tutorial, ri-BBB is used to represent the router interface ID of account B.

Step 3: Add peer router interfaces and initiate the connection

Follow these steps to add the peer router interface for each router interface and initiate the connection:

1. Log on to the [Express Connect console](#).

2. In the left-side navigation pane, click **VPC Connection > Router Interface**.
3. On the **Router Interface** page, select **More > Edit Peer Interface** in the **Actions** column of the router interface ri-BBB.
4. In the displayed dialog box, configure the peer router interface for account B as follows:
 - **Peer Account ID:** The ID of the peer account. In this tutorial, enter account A.
 - **Peer VRouter ID:** The ID of the peer VRouter. In this tutorial, enter vrt-AAA.
 - **Peer Router Interface ID:** The ID of the peer router interface. In this tutorial, enter vrt-AAA.
5. Repeat the preceding steps to configure the peer router interface for account A.
6. Return to the router interface page, click **More > Initiate a Connection** in the **Actions** column of the router interface ri-AAA. The connection is established successfully when the status of the router interfaces ri-AAA and ri-BBB changes to **Active**.

Step 4: Configure the routes

After creating the router interfaces, follow these steps to configure the routes for the two VPCs:

1. On the Router Interface page, click **Router Configuration** next to the target router interface.

Create Peering Connection Refresh		Instance Name Enter							
Monitor	Initiator	Initiator Region	Acceptor	Acceptor Region	Belong to Same Account	Specification	Billing Method	Status	Actions
	vpc-m5e2hlpw ri-m5e33r3n78z	China North 1 (Qingdao)	vpc-2zeismhm ri-2zev2q96u	China North 2 (Beijing)	No	Mini 2	Subscription Expires at Oct 28, 2018, 00:00:00 Connected at Sep 28, 2018, 16:14:00	<div> <div>Initiator: Activated</div> <div>Acceptor: Activated</div> </div>	

2. Click **Add Route Entry**.
3. In the displayed dialog box, configure the route according to the following information:
 - **Destination CIDR Block:** The CIDR Block of the peer VPC.
 - **Next Hop Type:** Select **Router Interface**.
 - **Router Interface:** Select **General Routing** and select a router interface.
4. Repeat the preceding steps to configure the route for the peer router interface.

In this tutorial, the router configurations are as follows:

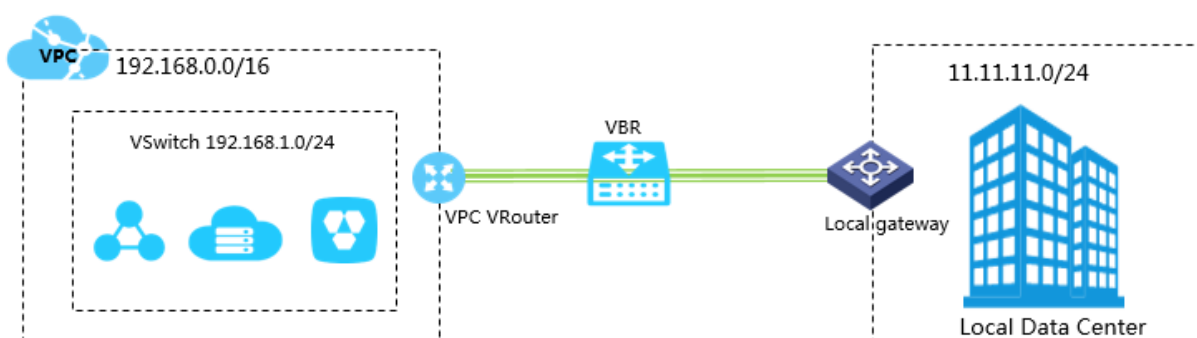
Destination CIDR Block	Next Hop Type	Description
172.16.100.0/24 (VSwitch CIDR block of VPC B)	Router interface of VPC A	Route table configuration of VPC A
192.168.100.0/24 (VSwitch CIDR block of VPC A)	Router interface of VPC B	Route table configuration of VPC B

3 Connect a local data center to a VPC through a physical connection

As shown in the following figure, this tutorial provides a step-by-step guidance on connecting an on-premises local data center to the Alibaba Cloud VPC by using the physical connection.

Example

In this tutorial, the VPC and local data center configurations in the following figure are used.



Prerequisites

You have submitted a ticket and obtained the geographic position of the access point.

Step 1: Apply for a leased line

1. Log on to [Express Connect console](#).
2. In the left-side navigation pane, click **Physical Connection** > **Leased Line**.
3. Click **Apply for Leased Line Access**.

您可以直接联系阿里云合作伙伴，阿里云合作伙伴将会为您提供一站式服务，也可以选择自助申请，本操作以自助申请为例。

4. Configure the leased line. The following are the settings used in this tutorial.

- **Leased Line Name:** Enter a name for the leased line. In this tutorial, Beijing_Local is entered.
- **Access Point:** Select the region where the access point of the leased line is located. In this tutorial, **Beijing-Daxing-A** is selected.
- **Carrier:** Select a network operator. In this tutorial, **Other (China)** is selected.
- **Access Port Type:** Select a port used by the leased line. In this tutorial, **100Base-T-100M electrical port** is selected.

- **Access Bandwidth:** Select a bandwidth for the leased line. In this tutorial, **100 Mbit/s**port is selected.
- **Peer Address of Leased Line:** Enter the address of your local data center. For example, No. XX, XX Street, XX District, Beijing
- **Redundant Leased Line:** Select an existing leased line as the redundant physical connection. In this tutorial, redundant leased line is not used.

5. Click **Apply**.

Return to the **Leased line** page. The status of the leased line is **Application in Progress**.

6. After the application is approved, click **Pay Access Fee** to pay the fee. Then the system automatically assigns you a port and a physical connection ID.

Wait for Alibaba Cloud for reviewing and approving the application. The approving process usually takes two workdays. You can pay the leased line fee when the status of the leased line changes to **Approved**.

7. After the system finishes port allocation, the status of the leased line changes to **Access Construction in Progress**. You can click **View** to check the leased line details.
8. Instruct your carrier to connect the leased line to the allocated port. The carrier provides a list of staff who will be sent to the designated Alibaba Cloud data center (including their names, ID numbers, and phone numbers). **Open a ticket** to Alibaba Cloud to inform the after sales staff about the carrier staff list, the acquired connection ID, and when the carrier staff will go to the data center.

In the following workday, Alibaba Cloud after sales staff will schedule an appointment at the data center for the carrier staff and inform you of the contact information of the reception personnel in the data center on that day. Inform the carrier of the appointment information. After the carrier completes deployment in the Alibaba Cloud data center, Alibaba Cloud after sales staff changes the leased line status to **Waiting for Confirmation**.

9. After the carrier notifies you that the connection is deployed, find the leased line on the console and click **Confirm**.

The leased line status then changes to **Normal**. The installation of the leased line is now completed.

Step 2: Create a VBR on the physical connection

Follow these steps to create a VBR:

1. Log on to [Express Connect console](#).

2. In the left-side navigation pane, click **Physical Connection > Virtual Border Router**.

3. Click **Create VBR**. The following are the settings used in this tutorial.

- **Object:** Select **This Account**.
- **Name:** Enter a name for the router interface. In this tutorial, "Beijing_Border_Router" is entered as the name.
- **Description:** Enter a description.
- **Leased Line:** Select the leased line created in the Step 1.
- **VLAN ID:** Enter a VLAN ID.
- **Circuit Code:** Enter the circuit code provided by the operator.
- **Addresses:** Configure the IP addresses used to communicate according to the following information:
 - **Alibaba Cloud Side:** The IP address used as the route gateway to route data from VPC to your local data center. In this tutorial, 10.100.0.1 is used.
 - **Customer Side:** The IP address used as the route gateway to route data from your local data center to VPC. In this tutorial, 10.100.0.10 is used.
 - **Subnet Mask:** The subnet mask of the specified IP addresses. In this tutorial, 255.255.255.0 is entered.

4. Click **Confirm Creation**.

If the status of VBR is **Normal**, it indicates that the VBR has been created successfully. Now you have configured and activated the IP address 10.100.0.1/24 of Alibaba Cloud side. You need to configure the IP address 10.100.0.10/24 of the peer side and do the ping test to check whether the communication is normal.

Step 3: Connect the VBR to the VPC through router interfaces

Create a router interface for the VPC and VBR separately to create a communication channel for the VPC and VBR.

Follow these steps to create router interfaces:

1. Log on to [Express Connect console](#).
2. In the left-side navigation pane, click **VPC Connection > Router Interface**.
3. Click **Create Router Interface**.
4. Configure the router interface and complete the payment.

The following are the settings used in this tutorial.

- **Scenario:** Select **Physical Access**.
- **Router Creation:** Select **Create Initiator and Receiver**.
- **Local Region:** Select the location where the access point of the leased line is reside. In this tutorial, **China (Beijing)** is selected.
- **Access Point:** Select the access point of the leased line. In this tutorial, Beijing Beijing-Daxing-B is selected.
- **Local VBR ID:** Select the VBR created in the step 2.
- **Peer Region:** Select the region where the VPC to be connected is located. In this tutorial, **China (Hangzhou)** is selected.
- **Peer VPC ID:** Select the VPC to be connected.

After the router interface is created, the system creates a router interface for the VRouter and the VBR respectively and initiates the connection.

Step 4: Configure route entries

After creating a router interface, you must configure a route entry to route destined for VPC to the local data center, and configure two route entries for the VBR router interface to route traffic to VPC and VBR respectively. At last, add a route entry in the local gateway to route traffic to VPC. Add route entry in VPC:

Follow these steps to route the traffic destined for the IDC (CIDR Block: 172.16.0.0/12) to the leased line:

1. On the Router Interface page, find the target VPC router interface and click **Route Configuration**.
2. In the displayed dialog box, configure the route:
 - **Destination CIDR Block:** The CIDR block of the local data center. In this example, enter 172.16.0.0/12.
 - **Next Hop Type:** Select **Router Interface (To VBR)**.
 - **Router Interface:** Select the router interface created for the VPC in the step 3.

Add route entries in VBR

- Add a rout entry pointing to the leased line

Follow these steps to route the traffic destined for the IDC (CIDR Block: 172.16.0.0/12) to the leased line:

1. Log on to [Express Connect console](#).
2. In the left-side navigation pane, click **Physical Connection > Virtual Border Router**.
3. Click the ID of the target router interface and click **Add Route Entry**.
4. In the displayed dialog box, configure the route:
 - **Destination CIDR Block:** Enter the CIDR block of the local data center. In this tutorial, 172.16.0.0/12 is entered.
 - **Next Hop Type:** Select **To leased line**.
 - **Router Interface:** Select the router interface created for the VBR.
5. Click **OK** and complete the configuration.

Then you can access the Alibaba Cloud-side IP address 10.100.0.1 from the local data center.

- Add a route entry pointing to the VPC

Follow these steps to route the traffic destined for the VPC (CIDR Block: 192.168.0.0/16) to the VPC:

1. Log on to [Express Connect console](#).
2. In the left-side navigation pane, click **Physical Connection > Virtual Border Router**.
3. Click the ID of the target router interface and click **Add Route Entry**.
4. In the displayed dialog box, configure the route:
 - **Destination CIDR Block:** Enter the CIDR Block of the VPC. In this tutorial, 192.168.0.0/16 is entered.
 - **Next Hop Type:** Select **Router Interface (To VPC)**.
 - **Router Interface:** Select the router interface associated with the VPC.
5. Click **OK** and complete the configuration.

Configure the route of the local data center

Now the route configuration for the Alibaba Cloud side is completed. However, to establish the connection from the IDC to the VPC, you must add a route entry for the gateway of you IDC to route traffic destined for the VPC to the IP address of the Alibaba Cloud side. You can configure a static route or BGP dynamic routing to forward data in the local data center to VBR:

- Static route

Example:

```
ip route 192.168.0.0/16 10.100.0.1
```

- Dynamic routing

You can also use BGP to connect the VBR and the local data center.

1. Create a BGP peer group, see [Create BGP peer groups](#).
2. Add BGP peers to the BGP group, see [Create BGP peers](#).
3. Advertise the BGP network in the VBR, see [Advertise BGP network](#).



Note:

Ensure the destination CIDR block of the BGP route entry is the static route that you have configured. In this tutorial, it is 192.168.0.0/16.

When the routing configuration is complete, intranet communication link between the local data center and VPC (local data center-leased line-VBR-VPC) is completed and the route can be reached.



Note:

You can manage the access between the devices of the local data center and cloud products of the Alibaba Cloud by adjusting ECS security group rules or adding RDS whitelist.

Step 5: Test the performance

See [Test on the network performance of leased line](#) to test the rate of leased line to meet the business needs.