Alibaba Cloud
Cloud Enterprise Network

Best Practices

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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 `cd /d C:/windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig` *[-all|-t]*
{} or {a|b}	It indicates that it is a required value, and only one item can be selected.	`swich` *{stand | slave}*

Contents

1 Connect a local data center to Alibaba Cloud using BGP active/standby links

This tutorial introduces how to use a Cloud Enterprise Network (CEN) and leased lines to build a hybrid cloud with active/standby links.

Solution overview

Complete these steps to configure an active/standby link that enables access to Alibaba Cloud:

1. Build redundant leased lines

   Create redundant leased lines to connect the local data center to Alibaba Cloud. Configure BGP routing between the local data center and the VBRs. For more information, see *Redundant physical connection*.

2. Configure health check

   Configure health check so that when the active link fails, traffic will automatically be sent on the standby link instead. For more information, see *Health check*.

3. Attach networks

   Attach VBRs and VPCs to the created CEN instance. For more information, see *Connect network instances in different regions using same account*.

4. Configure routing

   You can set the routing priority by configuring the length of the AS-Path. For more information, see *Advertise the BGP network and set the routing weights at the local IDC*.

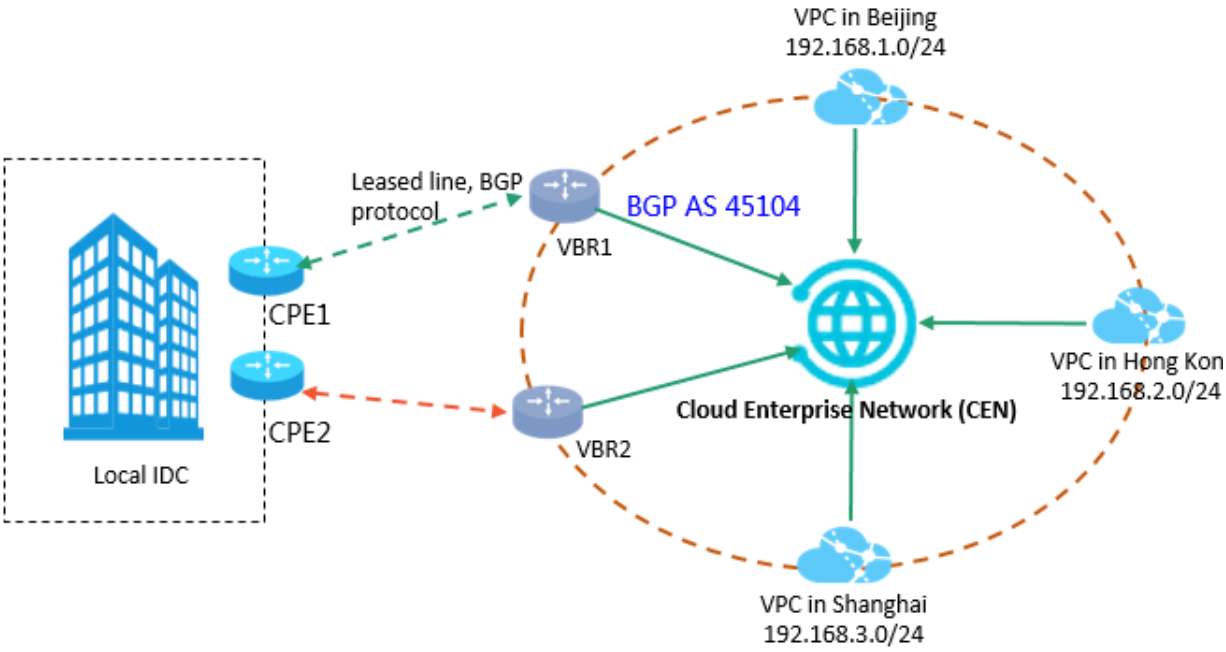
Network architecture

The network architecture used in this tutorial is as follows:

- The local data center is already connected to Alibaba Cloud VBRs with two redundant leased lines. The BGP protocol is used between the local data center and the VBRs.
- Three VPCs are already created in China (Beijing), China (Shanghai), and China (Hong Kong) regions.
- The CIDR blocks of networks used in this tutorial are as follows:

Network	CIDR Block
Local data center	10.1.1.0/24
Beijing VPC	192.168.1.0/24

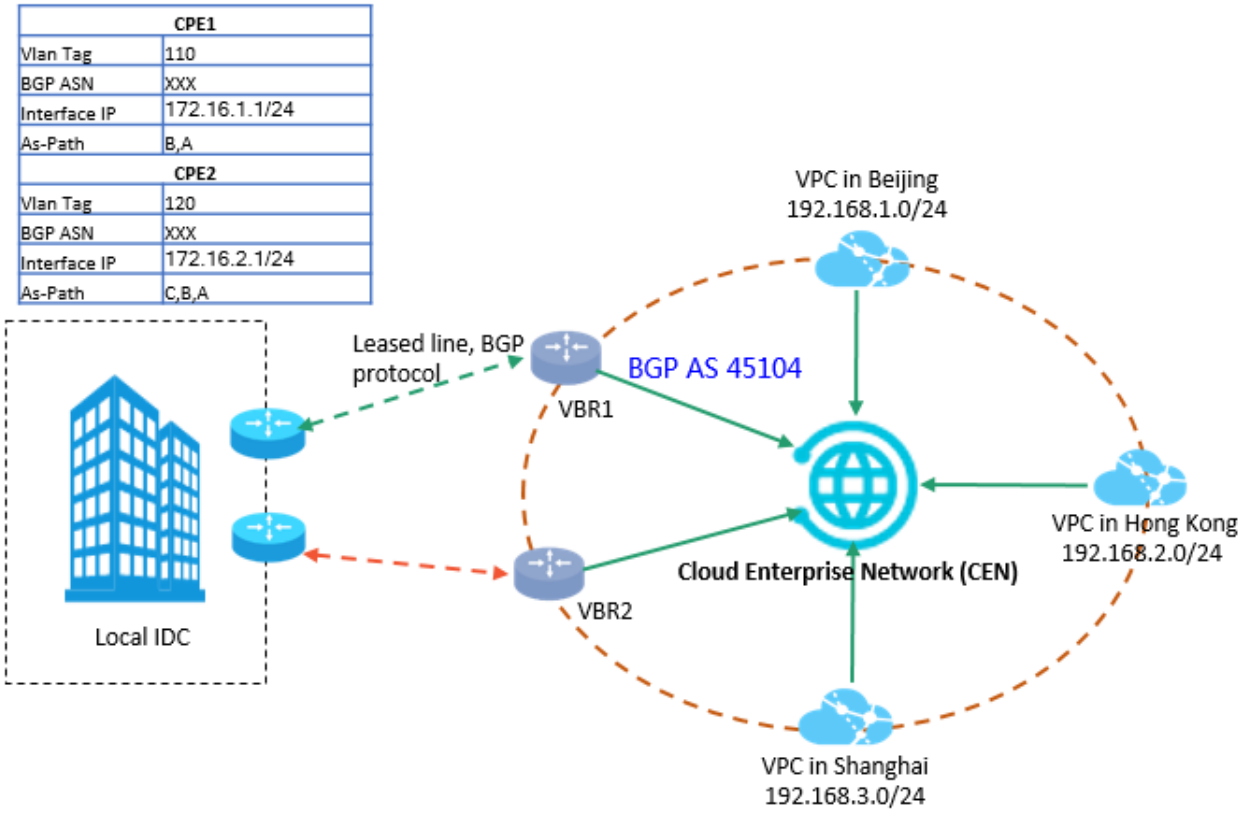
Network	CIDR Block
Shanghai VPC	192.168.1.0/24
Hong Kong VPC	192.168.3.0/24



Advertise the BGP network and set the routing weights at the local IDC

Assume that the local data center and the VBRs have both created BGP peers (for more information, see *Create a BGP peer*).

You must configure a BGP route (10.1.1.0/24) advertised to Alibaba Cloud and configure routing weights by setting the AS-Path at the local data center to implement active/standby routing from Alibaba Cloud to IDC.



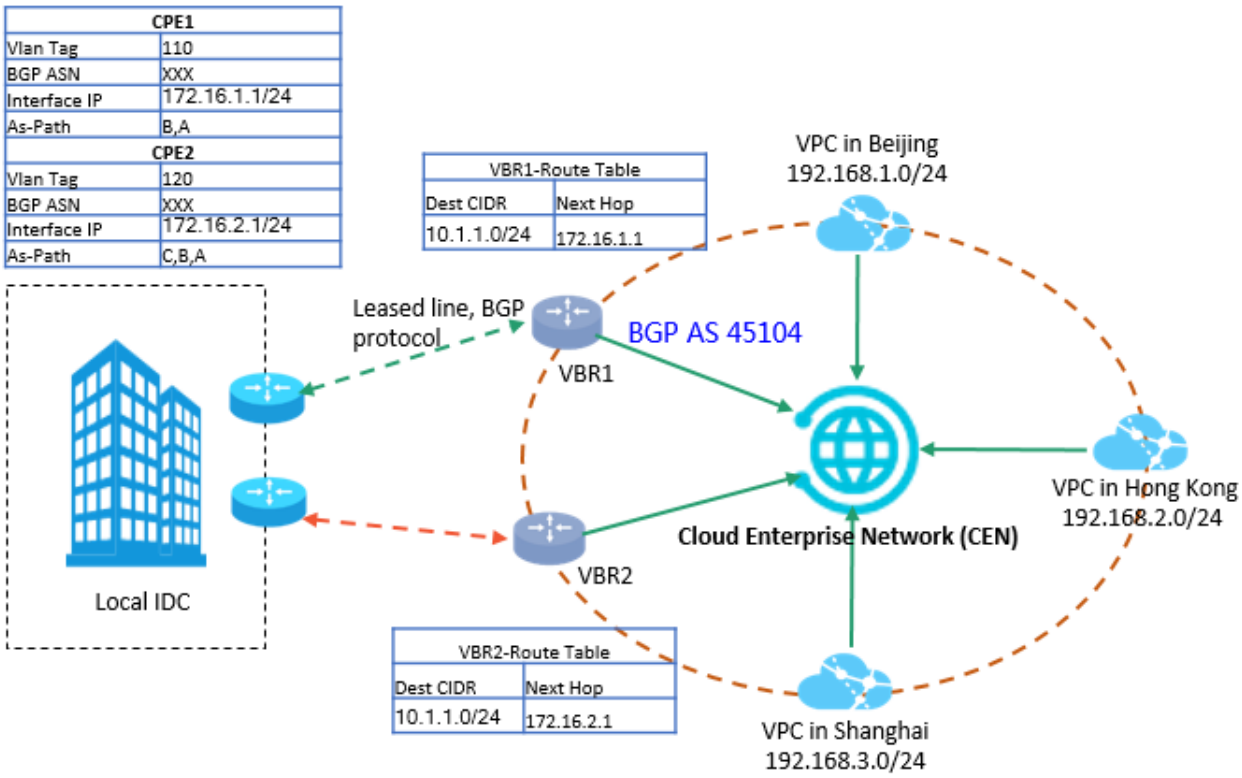
As shown in the preceding figure, the green link (CPE1) is the active link and the red one (CPE2) is the standby link. The BGP configurations of these two CPEs are as follows.

You can set the routing priority by configuring the AS-Path length. The shorter the As-Path length, the higher the priority.

Configuration	CPE1	CPE2
Vlan Tag	110	120
Network	10.1.1.0/24	10.1.1.0/24
BGP ASN	XXX	XXX
Interface IP	172.16.1.1/24	172.16.2.1/24
As-Path	B,A	C,B,A

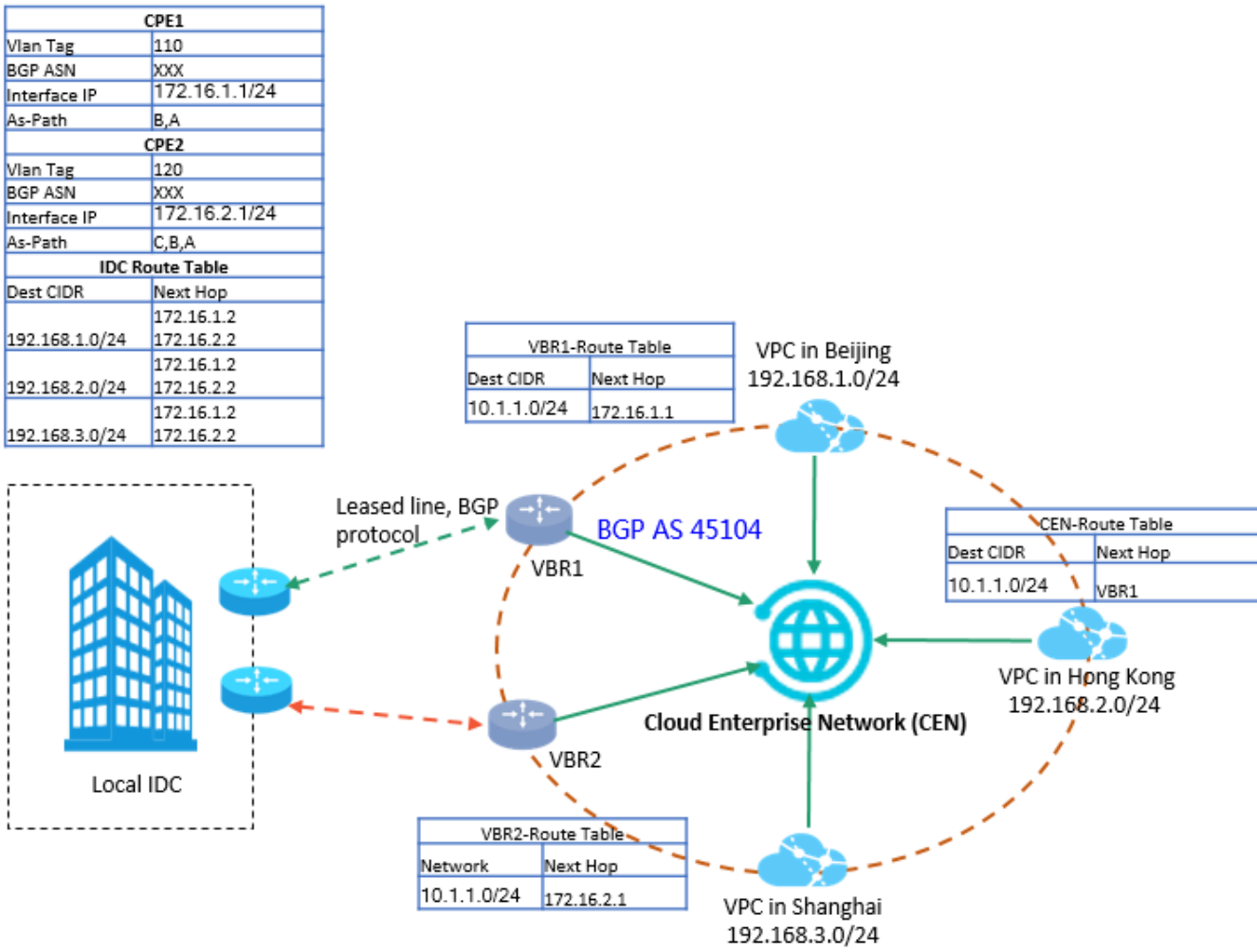
CEN can automatically learn routing entries from the attached networks, and also propagate its own routing entries to them. After a VBR learns a route from IDC, CEN synchronizes the route to the networks attached to it with route weight.

- BGP routing in VBR



As shown in the following figure, the routing tables of VBR1 and VBR2 contain routing information and next hops learned from the BGP peers of VBR1 and VBR2. The VBRs, which are attached to the CEN, send the BGP routing information learned from the local data center to the CEN, including AS-Path properties.

- Full routing table



After attaching the VPC and VBR to CEN, the BGP route that the VBR learned are propagated to CEN. The CEN then synchronizes the routes to all attached networks based on the routing property.

The BGP route that the VBRs learned from the local data center has the same destination CIDR but have different routing property. The leased line connected to VBR1 acts as the active link (the AS-Path is shorter), and the one connected to VBR2 acts as the standby link. CEN will synchronize this route information to other networks attached to it, such as VPCs. As shown in the VPC routing tables, all routes to 10.1.1.0/24 point to VBR1.

Additionally, CEN propagates CEN system routes into BGP network. Therefore, the routing table of the local data center includes the CEN routes and the next hops are the IP addresses of the two VBR interfaces.

Similarly, if you want to configure an active/standby route that from the local IDC to the Alibaba Cloud (192.168. x. 0/24), you can do this by configuring the BGP properties like weight.

2 Connect a local data center to Alibaba Cloud using two leased lines configured with static routes

This tutorial introduces how to use leased lines and CEN to connect an IDC to Alibaba Cloud and enable the IDC to communicate with VPCs in different regions.

Solution overview

To connect a local IDC to Alibaba Cloud, complete these steps:

1. Build redundant leased lines

   Create redundant leased lines to connect the local data center to Alibaba Cloud. Configure static routes between the IDC and the VBRs. For more information, see *Redundant physical connection*.

2. Configure health check (required)

   Configure health check. Therefore, the traffic can be automatically routed to the standby link when the active link fails. When configuring health check, you can set any unused private IP address in a VPC attached to the CEN instance as the source IP address, and set the IP address of the CPE interface connected to the VBR as the destination IP address. For more information, see *Health check*.

3. Attach networks

   Attach the VBRs and VPCs to the created CEN instance. For more information, see *Attach networks*.

4. Configure and publish routes

   Configure routes in the IDC and VPCs. For more information, see *IDC and VBR static route configuration*.

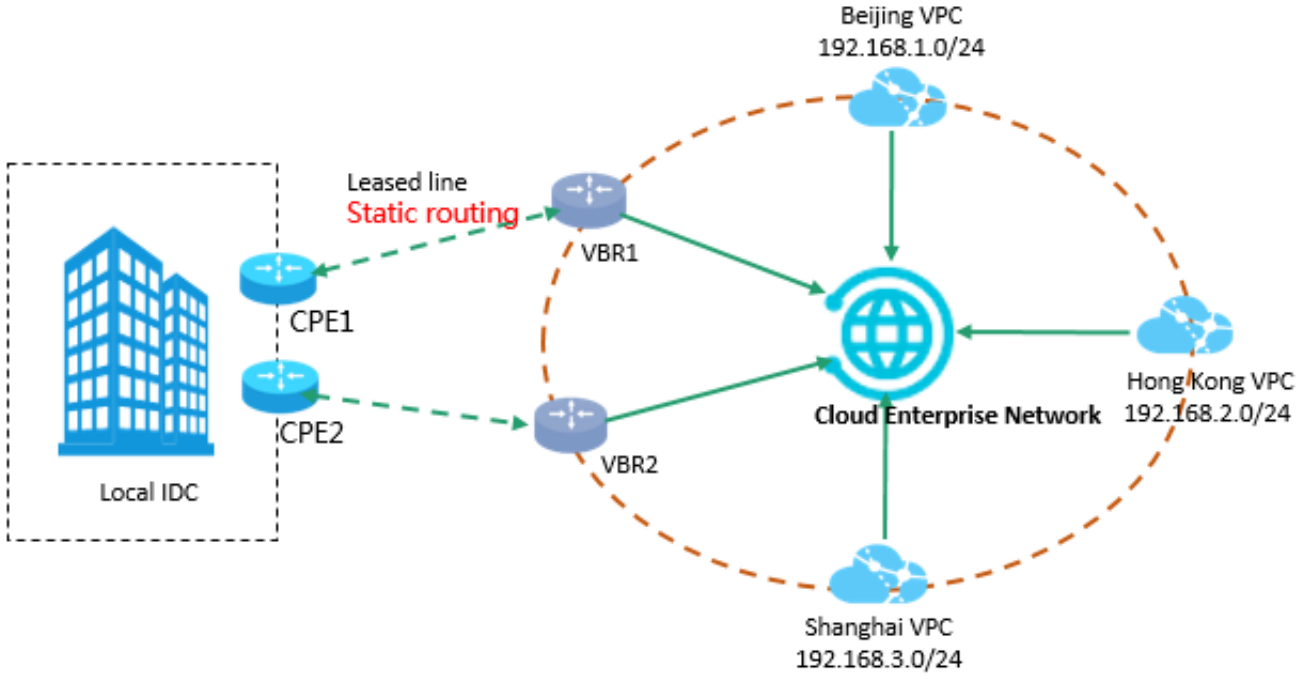
Network architecture

The network architecture used in this tutorial is as follows:

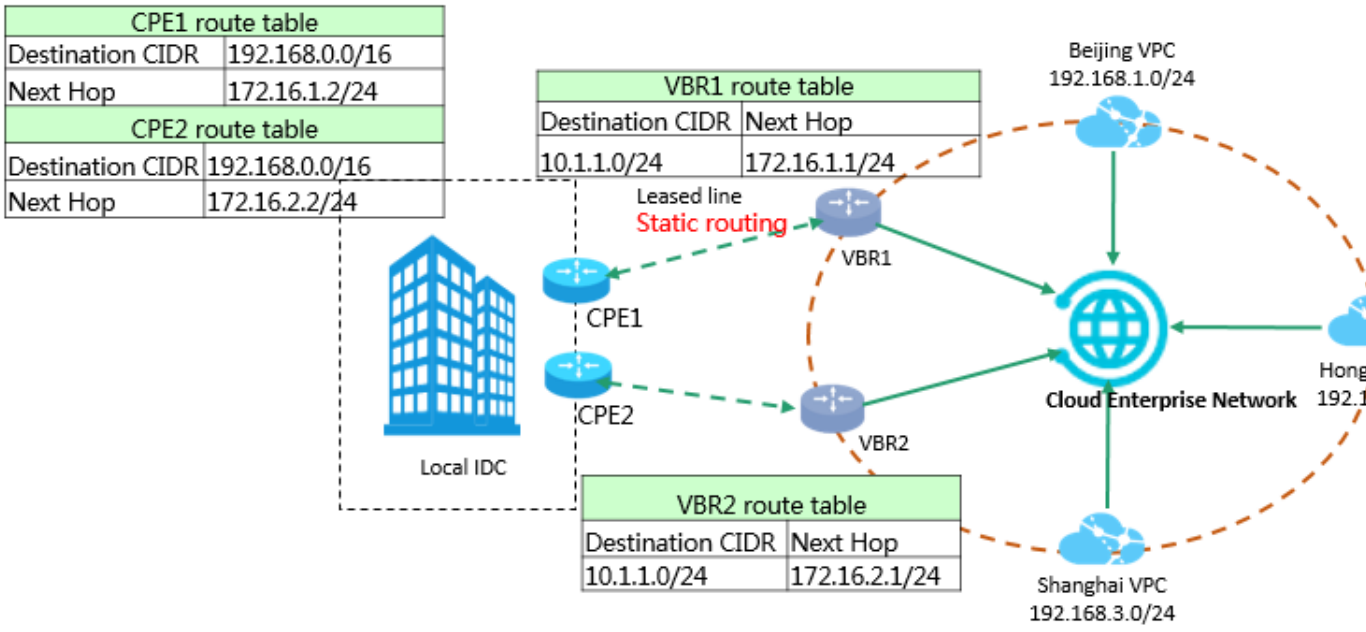
- The local data center is already connected to the VBRs through two leased lines. Configure static routes between the IDC and the VBRs.
- Three VPCs are already created in the China (Beijing), China (Shanghai), and China (Hong Kong) regions.

- The CIDR blocks of networks used in this tutorial are as follows:

Network	CIDR Block
Local data center	10.1.1.0/24
Beijing VPC	192.168.1.0/24
Shanghai VPC	192.168.1.0/24
Hong Kong VPC	192.168.3.0/24



IDC and VBR static route configuration



The routing configurations in this tutorial are as follows:

- IDC route configuration

  Configure a static route pointing to Alibaba Cloud on CPE1 and CPE2 respectively.

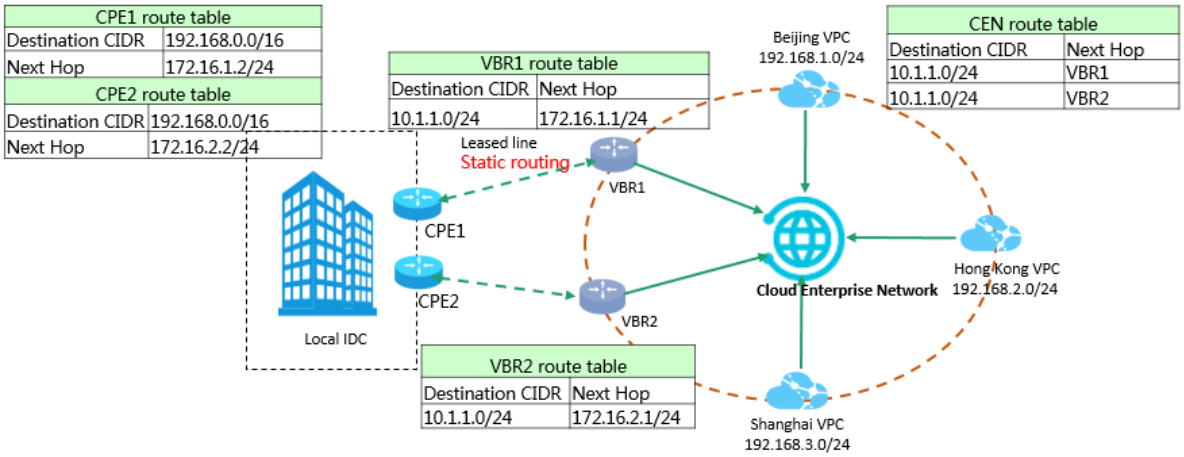
Configuration	CPE1	CPE2
Destination CIDR Block	192.168.0.0/16	192.168.0.0/16
Next hop	172.16.1.2/24 (VBR1)	172.16.2.2/24 (VBR2)

- VBR route configuration

  Configure a static route pointing to the local IDC on VBR1 and VBR2 respectively.

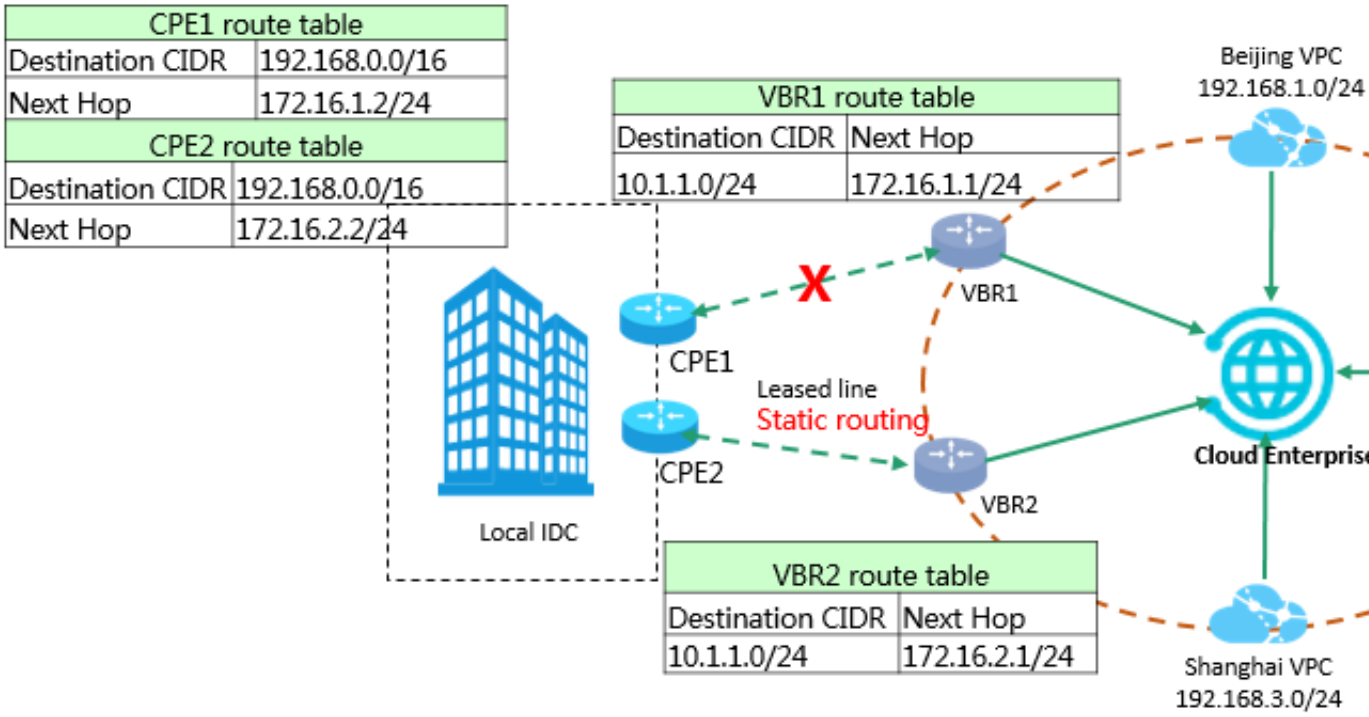
Configuration	VBR1	VBR2
Destination CIDR Block	10.1.1.0/24	10.1.1.0/24
Next hop	172.16.100.0/24	172.16.2.1/24

- CEN routes



After configuring routes for the VBRs, the CEN publishes the configured static routes to the CEN. In CEN, the two leased lines form ECMP and are in active-active status.

Redundant disaster tolerance



When a leased line fails (such as the line from VBR1 to CPE1), data from Alibaba Cloud to the IDC is forwarded to VBR2. This solution achieves disaster tolerance by automatically switching the link.