

# Enterprise Router

## FAQs

**Issue** 01  
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# 1 Why Traffic Can't Be Forwarded from a VPC with a Route Destination of 0.0.0.0/0 to Its Enterprise Router?

## Scenarios

Traffic cannot be forwarded from a VPC to the enterprise router that it is attached to if you set the destination of a route in the VPC route table to 0.0.0.0/0 and:

- An ECS in the VPC has an EIP bound.

### NOTE

Refer to solution 1.

- ELB, NAT Gateway, VPC Endpoint and DCS are deployed in the VPC.

### NOTE

Refer to solution 1 or solution 2.

When method 2 is used, if a VPC wants to access public network, the traffic from the VPC is forwarded to the enterprise router and then to the public network. For this reason, if a VPC accesses the public network using an EIP, do not use this method.

## Solutions

Select a solution based on your actual service scenario.

- Solution 1: Change the destination (0.0.0.0/0) of the default route to a specific IP address range, for example, 192.168.0.0/16.
- Solution 2: Add eight routes with specific IP address ranges as the destination to replace the default route (with a destination of 0.0.0.0/0).

**Table 1-1** Route destinations and next hops

Destination	Next Hop
128.0.0.0/1	Enterprise router
64.0.0.0/2	Enterprise router

<b>Destination</b>	<b>Next Hop</b>
32.0.0.0/3	Enterprise router
16.0.0.0/4	Enterprise router
8.0.0.0/5	Enterprise router
4.0.0.0/6	Enterprise router
2.0.0.0/7	Enterprise router
1.0.0.0/8	Enterprise router

# 2 How Do I Route Traffic to 100.64.x.x Through an Enterprise Router?

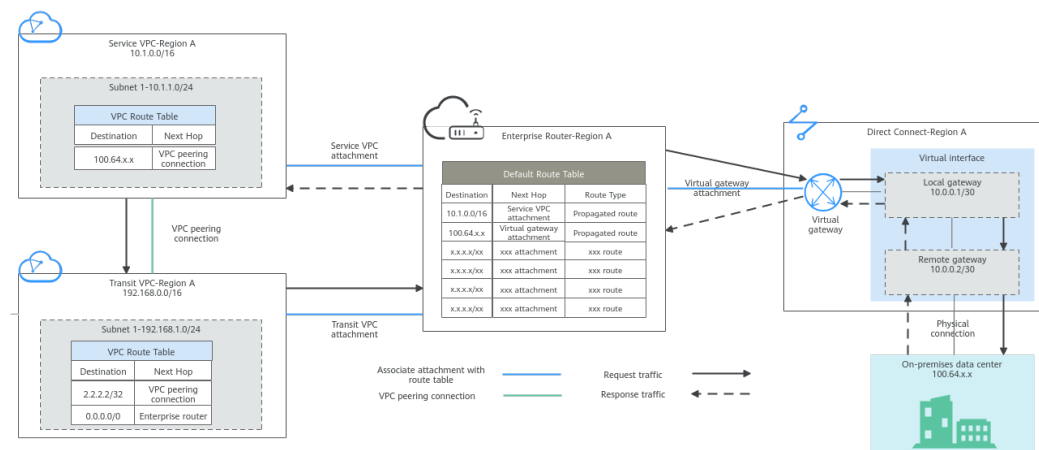
## Scenarios

A route with 100.64.x.x as the destination and an enterprise router as the next hop cannot be added to a VPC route table.

## Solutions

If you want to route traffic to 100.64.x.x through an enterprise router, you need to create a transit VPC. **Figure 2-1** shows the network diagram.

**Figure 2-1** Transit VPC network diagram



The request traffic from the service VPC to the on-premises data center will be forwarded through the transit VPC, but the response traffic will not. For details, see **Table 2-1**.

**Table 2-1** Network traffic flows

Path	Description
Request traffic: service VPC → transit VPC → enterprise router → virtual gateway → on-premises data center	<ol style="list-style-type: none"><li>1. The service VPC route table has a route with the VPC peering connection as the next hop to forward traffic from the service VPC to the transit VPC.</li><li>2. The transit VPC route table has a route with next hop set to the enterprise router to forward traffic from the transit VPC to the enterprise router.</li><li>3. The enterprise router route table has a route with next hop set to virtual gateway attachment to forward traffic from the enterprise router to the virtual gateway.</li><li>4. The virtual gateway is connected to the virtual interface. Traffic from the virtual gateway is forwarded to the physical connection through the remote gateway of the virtual interface</li><li>5. Traffic is sent to the on-premises data center over the connection.</li></ol>
Response traffic: on-premises data center → virtual gateway → enterprise router → service VPC	<ol style="list-style-type: none"><li>1. Traffic is forwarded to the virtual interface through the connection.</li><li>2. The virtual interface is connected to the virtual gateway. Traffic from the virtual interface is forwarded to the virtual gateway through the local gateway of the virtual interface.</li><li>3. Traffic is forwarded from the virtual gateway to enterprise router.</li><li>4. The enterprise router route table has a route with next hop set to the service VPC attachment to forward traffic from the enterprise router to the service VPC.</li></ol>

The required resources and routes are as follows:

- **Table 2-2:** Required service VPC, transit VPC, enterprise router, and Direct Connect connection that connects the cloud and the on-premises data center
- **Table 2-3:** Required routes of the service VPC, transit VPC, and enterprise router

**Table 2-2** Resource planning

Resource	Quantity	Description
VPC	2	Service VPC that your services are deployed and needs to be attached to the enterprise router <ul style="list-style-type: none"><li>• VPC CIDR block: 10.1.0.0/16</li><li>• Subnet CIDR block: 10.1.1.0/24</li></ul>

Resource	Quantity	Description
		Transit VPC that is connected to the service VPC over a VPC peering connection and needs to be attached to the enterprise router <ul style="list-style-type: none"> <li>• VPC CIDR block: 192.168.0.0/16</li> <li>• Subnet CIDR block: 192.168.1.0/24</li> </ul>
Enterprise router	1	Three attachments on the enterprise router: <ul style="list-style-type: none"> <li>• Service VPC attachment: service VPC</li> <li>• Transit VPC attachment: transit VPC</li> <li>• Virtual gateway attachment: virtual gateway of Direct Connect</li> </ul>
Direct Connect	1	<ul style="list-style-type: none"> <li>• Connection</li> <li>• Virtual gateway that needs to be attached to the enterprise router</li> <li>• Virtual interface               <ul style="list-style-type: none"> <li>- Local gateway: 10.0.0.1/30</li> <li>- Remote gateway: 10.0.0.2/30</li> <li>- Remote subnet: subnet of the on-premises data center (100.64.x.x)</li> </ul> </li> </ul>

Table 2-3 Route planning

Route Table	Destination	Next Hop	Route Type
Service VPC	100.64.x.x	VPC peering connection	Static route (custom)
Transit VPC	2.2.2.2/32 <b>NOTE</b> 2.2.2.2/32 is mandatory and must be added.	VPC peering connection	Static route (custom)
	0.0.0.0/0	Enterprise router	Static route (custom)
Enterprise router	10.1.0.0/16	Service VPC attachment	Propagated route
	100.64.x.x	Virtual gateway attachment	Propagated route

**Step 1** [Submit a service ticket](#) to request 100.64.x.x as the destination for [Step 4](#).

**Step 2** Create a transit VPC, attach it to the enterprise router, and associate the transit VPC with the default route table of the enterprise router.



- The subnet of the transit VPC cannot overlap with that of the service VPC, or the VPC peering connection to be created in [Step 3](#) cannot take effect.
- The transit VPC cannot have the following situations. Otherwise, the default route (0.0.0.0/0) to be configured in [Step 4](#) cannot forward traffic.
  - An ECS in the VPC has an EIP bound.
  - The VPC is being used by ELB (either dedicated or shared load balancers), NAT Gateway, VPC Endpoint, and DCS.

**Step 3** Create a VPC peering connection between the service VPC and transit VPC.

#### [Creating a VPC Peering Connection with Another VPC in Your Account](#)

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#### NOTICE

You do not need to add routes for the VPC peering connection. For details about the routes to be added, see [Step 4](#).

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**Step 4** Add routes to the VPC route tables.

For details about required routes, see [Table 2-3](#).

1. Add the route to the service VPC route table.
2. Add two routes to the transit VPC route table.

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# 3 How Do I Enable Two Attachments of an Enterprise Router to Learn Routes from Each Other?

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If you want two attachments of an enterprise router to learn routes from each other, the router and each attachment must have a unique ASN. In this way, the enterprise router advertises the learned route information between the attachments.

If you want a virtual gateway and a VPN gateway attached to an enterprise router to learn routes from each other, their ASNs can be as follows:

- Enterprise router: 64512
- Virtual gateway attachment: 64513 (BGP ASN of the virtual gateway)
- VPN gateway attachment: 64515 (BGP ASN of the VPN gateway)

 **NOTE**

VPC attachments do not support route learning.