

# IP Hardware Subnet Routing Configuration

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# Chapter 1 IP Hardware Subnet Routing Configuration

## 1.1 IP Hardware Subnet Configuration Task

### 1.1.1 Overview

IP hardware subnet routing is similar to IP fast exchange.

When the IP hardware subnet routing is not enabled, before forwarding message containing the IP address A at the next hop, the switch first checks whether the item of destination A exists in the IP cache of hardware. If the item exists, the message will be forwarded through hardware. If the item does not exist, the message is sent to CPU and then processed through software. IP hardware subnet routing items include the destination subnet, mask, IP address of the next hop, interface and so on. When the IP hardware subnet routing is enabled, after the IP cache fails to be matched, the system is to check the IP hardware subnet routing items. If the matched item is found, the message will be directly forwarded through the next-hop IP address and the interface designated in the matched item. If the IP hardware subnet routing item is not found, the message will be sent to CPU for processing.

The IP hardware subnet routing has two modes: automatic and manual. In manual mode, you need to manually configure all routing items required by the IP hardware subnet routing. Note that routing items having longer mask of destination subnet should be configured earlier. In automatic mode, the system automatically adds the known routes to the hardware subnet routing. All the procedure is automatic after the hardware subnet routing is started.

Model	Mode Supported
3224 / 3224M / 6508	manual mode
Other layer-3 swiches	automatic mode

### 1.1.2 Configuring IP Hardware Subnet Routing

Perform the following steps to configure the IP hardware subnet routing:

Step	Command	Description
1	<b>[no] ip exf</b> { <b>default</b>   <i>destination mask</i> } { <b>cpu</b>   <i>nexthop vlan vlanid</i> }	Add or delete a hardware subnet route. Deleting a hardware subnet route requires to specify the destination network and mask. Replace <b>destination</b> and <b>mask</b> in the command line with <b>default</b> when you delete a route. In this case, The next hop is not CPU. The command is effective only in manual configuration mode.
2	<b>[no] ip exf</b>	Enable or disable the IP hardware subnet routing.

### 1.1.3 Checking the State of IP Hardware Subnet Routing

Command	Description
<b>show ip exf</b>	Displays the current state of the IP hardware subnet routing.

## 1.2 Configuration Example

Pay attention to the following content when you configure the routing items:

- As to the direct-connecting routing, the next hop is CPU. If the next hop is a routing interface not an IP address, do as in the direct-connecting routing.
- When the number of the routing items in the system is bigger than that of the IP hardware subnet routing items, the default routing cannot be the IP hardware subnet routing. Two or several routes, which are prefix to each other, must be used together when IP hardware subnet routing is adopted. For other items, advise to add heavy-traffic items to the hardware subnet routing table. Our 3224 series switches support 15 hardware subnet routes, including the default subnet route.
- The ARP of the next-hop IP address does not exist, the system will send an ARP request and temporarily designate the next-hop routing item as CPU. After the system receives the ARP response, the system then update the next hop to the user-designating address. If the VLAN interface where the next hop resides is found different from the configured interface during the ARP response, the next hop of the route is designated as CPU. Users then need to correct the configuration.
- If the next-hop interface or the interface protocol does not exist, the item will not be added to the hardware subnet routing table.

Suppose a switch has the following routing items:

- (1) 192.168.0.0/16 next hop 192.168.26.3/vlan1
- (2) 192.168.20.0/24 next hop 192.168.26.1/vlan1
- (3) 192.168.1.0/24 direct-connecting routing
- (4) 192.168.26.0/24 direct-connecting routing
- (5) 10.0.0.0/8 next hop 192.168.1.4/vlan2
- (6) 0.0.0.0/0 next hop 192.168.1.6/vlan2

The destination subnet of route item 1 is the prefix of subnet 2, 3 and 4. Therefore, these items should be added to the hardware subnet routing table together. Item 3 and 4 are direct-connecting routing and the next hop is CPU.

The relative configuration is as follows:

```
ip exf 192.168.20.0 255.255.255.0 nexthop 192.168.26.1 vlan 1
ip exf 192.168.1.0 255.255.255.0 cpu
ip exf 192.168.26.0 255.255.255.0 cpu
ip exf 192.168.0.0 255.255.0.0 nexthop 192.168.26.3 vlan 1
```

```
ip exf 10.0.0.0 255.0.0.0 nexthop 192.168.1.4 vlan 2  
ip exf 0.0.0.0 0.0.0.0 nexthop 192.168.1.6 vlan 2
```