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Multicast routing and forwarding commands

The term "interface" in this chapter refers to VLAN interfaces.

delete ip rpf-route-static

Use **delete ip rpf-route-static** to delete static multicast routes.

Syntax

```
delete ip rpf-route-static [ vpn-instance vpn-instance-name ]
```

Views

System view

Predefined user roles

network-admin

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, the command deletes static multicast routes on the public network.

Usage guidelines

This command deletes static multicast routes, but the **undo ip rpf-route-static** command deletes a specific static multicast route.

Examples

```
# Delete all static multicast routes on the public network.
```

```
<Sysname> system-view
```

```
[Sysname] delete ip rpf-route-static
```

```
This will erase all multicast static routes and their configurations, you must reconfigure all static routes.
```

```
Are you sure?[Y/N]:y
```

Related commands

```
ip rpf-route-static
```

display mac-address multicast

Use **display mac-address multicast** to display static multicast MAC address entries.

Syntax

```
display mac-address [ mac-address [ vlan vlan-id ] ] [ multicast ] [ vlan vlan-id ] [ count ] ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

mac-address: Specifies a multicast MAC address. The MAC address can be any legal multicast MAC address. (A multicast MAC address is the MAC address in which the least significant bit of the most significant octet is 1.)

vlan *vlan-id*: Specifies a VLAN by its VLAN ID in the range of 1 to 4094. If you do not specify a VLAN, this command displays the static multicast MAC address entries for all VLANs.

multicast: Specifies static multicast MAC address entries.

count: Specifies the number of static multicast MAC address entries. If you specify this keyword, the command displays the number of matching static multicast MAC address entries. If you do not specify this keyword, the command displays the contents of the matching entries rather than the entry count.

Usage guidelines

This command displays all MAC address table entries, including static multicast and unicast MAC address entries when one of the following conditions exists:

- You do not specify parameters.
- You specify either or both of the **vlan** and **count** keywords.

Examples

Display the static multicast MAC address entries for VLAN 2.

```
<Sysname> display mac-address multicast vlan 2
```

MAC Address	VLAN ID	State	Port/NickName	Aging
0100-0001-0001	2	Multicast	XGE1/0/1	N
			XGE1/0/2	

Display the number of static multicast MAC address entries.

```
<Sysname> display mac-address multicast count
```

```
1 mac address(es) found.
```

Table 1 Command output

Field	Description
VLAN ID	ID of the VLAN to which the network device identified by the MAC address belongs.
State	Status of the MAC address. If the multicast MAC address entry is static, this field displays Multicast .
Port/NickName	Outgoing ports or nickname of the Egress RB in a TRILL network for the packet that is sent to the MAC address in this MAC address entry. For more information about the nickname, TRILL, and RB, see <i>TRILL Configuration Guide</i> . NOTE: The switch does not support the TRILL function.
Aging	Aging time state. If this entry never expires, this field displays N .
1 mac address(es) found	One static multicast MAC address entry is found.

Related commands

mac-address multicast

display mrib interface

Use **display mrib interface** to display information about interfaces maintained by the MRIB, including PIM interfaces, IGMP interfaces, register interfaces, InLoopBack0 interfaces, and null0 interfaces.

Syntax

```
display mrib [ vpn-instance vpn-instance-name ] interface [ interface-type interface-number ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays information about interfaces maintained by the MRIB on the public network.

interface-type interface-number: Specifies an interface by its type and number. If you do not specify an interface, this command displays information about all interfaces maintained by the MRIB.

Examples

Display information about all interfaces maintained by the MRIB on the public network.

```
<Sysname> display mrib interface
Interface: Vlan-interface1
  Index: 0x00000001
  Current state: up
  MTU: 1500
  Type: BROADCAST
  Protocol: PIM-DM
  PIM protocol state: Enabled
  Address list:
    1. Local address : 8.12.0.2/16
       Remote address: 0.0.0.0
       Reference      : 1
       State          : NORMAL
```

Table 2 Command output

Field	Description
Interface	Interface name.
Index	Index number of the interface.
Current state	Current status of the interface: up or down.
MTU	MTU value.
Type	Interface type: <ul style="list-style-type: none">• BROADCAST—Broadcast link interface.• LOOP—Loopback interface.• REGISTER—Register interface.• NBMA—NBMA interface.

Field	Description
	<ul style="list-style-type: none"> MTUNNEL—Multicast tunnel interface.
Protocol	Protocol running on the interface: PIM-DM, PIM-SM, IGMP, or MD.
PIM protocol state	Whether PIM is enabled: <ul style="list-style-type: none"> Enabled. Disabled.
Address list	Interface address list.
Local address	Local IP address.
Remote address	Remote end IP address. This field is displayed when the interface is vlink type.
Reference	Number of times that the address has been referenced.
State	Status of the interface address: NORMAL or DEL.

display multicast boundary

Use **display multicast boundary** to display multicast boundary information.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] boundary [ group-address [ mask-length | mask ] ] [ interface interface-type interface-number ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays multicast boundary information on the public network.

group-address: Specifies a multicast group by its IP address in the range of 224.0.0.0 to 239.255.255.255. If you do not specify a multicast group, this command displays the multicast boundary information of all multicast groups.

mask-length: Specifies an address mask length in the range of 4 to 32. The default is 32.

mask: Specifies an address mask. The default is 255.255.255.255.

interface *interface-type interface-number*: Specifies an interface by its type and number. If you do not specify an interface, this command displays the multicast boundary information on all interfaces.

Examples

Display the multicast boundary information of all multicast groups on all interfaces on the public network.

```
<Sysname> display multicast boundary
Boundary          Interface
224.1.1.0/24      Vlan1
239.2.2.0/24      Vlan2
```

Table 3 Command output

Field	Description
Boundary	Multicast group that corresponds to the multicast boundary.
Interface	Boundary interface that corresponds to the multicast boundary.

Related commands

multicast boundary

display multicast forwarding df-info

Use **display multicast forwarding df-info** to display information about the DF for multicast forwarding.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] forwarding df-info [ rp-address ] [ verbose ]  
[ slot slot-number ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays information about the DF for multicast forwarding on the public network.

rp-address: Specifies an RP of BIDIR-PIM by its IP address.

verbose: Displays detailed information. If you do not specify this keyword, the command displays brief information about the DF.

slot *slot-number*: Specifies an IRF member device by its member ID. If you do not specify this option, the command displays information about the DF for multicast forwarding on the master device.

Usage guidelines

The router that acts as a DF is the only multicast data forwarder to the RP in a BIDIR-PIM domain.

Examples

```
# Display brief information about the DF for multicast routing on the public network.
```

```
<Sysname> display multicast forwarding df-info
```

```
Total 1 RP, 1 matched
```

```
00001. RP address: 7.11.0.2
```

```
Flags: 0x0
```

```
Uptime: 04:14:40
```

```
RPF interface: Vlan-interface1
```

```
List of 1 DF interface:
```

```
1: Vlan-interface2
```

```
# Display detailed information about the DF for multicast routing on the public network.
```

```
<Sysname> display multicast forwarding df-info verbose
```

Total 1 RP, 1 matched

00001. RP address: 7.11.0.2

MID: 2, Flags: 0x0

Uptime: 03:37:22

Product information: 0x7a2f762f, 0x718fee9f, 0x4b82f137, 0x71c32184

RPF interface: Vlan-interface1

Product information: 0xa567d6fc, 0xadeb03e3

Tunnel information: 0xdfb107d4, 0x7aa5d510

List of 1 DF interface:

1: Vlan-interface2

Product information: 0xa986152b, 0xb74a9a2f

Tunnel information: 0x297ca208, 0x76985b89

Table 4 Command output

Field	Description
Total 1 RP, 1 matched	Total number of RPs and total number of matching RPs.
00001	Sequence number of the entry to which the RP is designated.
MID	ID of the entry to which the RP is designated. Each entry to which the RP is designated has a unique MID.
Flags	Entry flag. This field displays one flag or the sum of multiple flags. In this example, the value 0x0 means that the entry has only one flag 0x0. The following flags are available for an entry: <ul style="list-style-type: none">• 0x0—The entry is in correct state.• 0x4—The entry fails to update.• 0x8—DF interface information fails to update for the entry.• 0x40—The entry is to be deleted.• 0x100—The entry is being deleted.• 0x200—The entry is in GR state.
Uptime	Existence duration for the entry to which the RP is designated.
RPF interface	RPF interface to the RP.
List of 1 DF interface	DF interface list.

display multicast forwarding event

Use **display multicast forwarding event** to display statistics for multicast forwarding events.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] forwarding event [ slot slot-number ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays statistics for the multicast forwarding events on the public network.

slot *slot-number*: Specifies an IRF member device by its member ID. If you do not specify this option, the command displays statistics for the multicast forwarding events on the master device.

Examples

Display statistics for the multicast forwarding events on the public network.

```
<Sysname> display multicast forwarding event
Total entry active event sent: 0
Total entry inactive event sent: 0
Total NoCache event sent: 2
Total NoCache event dropped: 0
Total WrongIF event sent: 0
Total WrongIF event dropped: 0
Total SPT switch event sent: 0
NoCache rate limit: 1024 packets/s
WrongIF rate limit: 1 packets/10s
Total timer of register suppress timeout: 0
```

Table 5 Command output

Field	Description
Total entry active event sent	Number of times that the entry-active event has been sent.
Total entry inactive event sent	Number of times that the entry-inactive event has been sent.
Total NoCache event sent	Number of times that the NoCache event has been sent.
Total NoCache event dropped	Number of times that the NoCache event has been dropped.
Total WrongIF event sent	Number of times that the WrongIF event has been sent.
Total WrongIF event dropped	Number of times that the WrongIF event has been dropped.
Total SPT switch event sent	Number of times that the SPT-switch event has been sent.
NoCache rate limit	Rate limit for sending the NoCache event, in pps.
WrongIF rate limit	Rate limit for sending the WrongIF event, in packets per 10 seconds.
Total timer of register suppress timeout	Number of times that the registration suppression has timed out in total.

Related commands

reset multicast forwarding event

display multicast forwarding-table

Use **display multicast forwarding-table** to display multicast forwarding entries.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] forwarding-table [ source-address [ mask { mask-length | mask } ] | group-address [ mask { mask-length | mask } ] | incoming-interface interface-type interface-number | outgoing-interface { exclude | include | match } interface-type interface-number | slot slot-number | statistics ] *
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays multicast forwarding entries on the public network.

source-address: Specifies a multicast source address.

group-address: Specifies a multicast group address in the range of 224.0.0.0 to 239.255.255.255.

mask-length: Specifies an address mask length. The default value is 32. For a multicast group address, the value range for this argument is 4 to 32. For a multicast source address, the value range for this argument is 0 to 32.

mask: Specifies an address mask. The default value is 255.255.255.255.

incoming-interface: Specifies the multicast forwarding entries that contain the specified incoming interface.

interface-type interface-number: Specifies an incoming interface by its type and number.

outgoing-interface: Specifies the multicast forwarding entries that contain the specified outgoing interface.

exclude: Specifies the multicast forwarding entries that do not contain the specified interface in the outgoing interface list.

include: Specifies the multicast forwarding entries that contain the specified interface in the outgoing interface list.

match: Specifies the forwarding entries that contain only the specified interface in the outgoing interface list.

slot *slot-number*: Specifies an IRF member device by its member ID. If you do not specify this option, the command displays multicast forwarding entries on the master device.

statistics: Displays statistics for the multicast forwarding entries.

Examples

Display multicast forwarding entries on the public network.

```
<Sysname> display multicastforwarding-table
```

```
Total 1 entry, 1 matched
```

```
00001. (172.168.0.2, 227.0.0.1)
```

```
Flags: 0x0
```

```
Uptime: 00:08:32, Timeout in: 00:03:26
```

```
Incoming interface: Vlan-interface10
```

```
    Incoming sub-VLAN: VLAN 11
```

```
    Outgoing sub-VLAN: VLAN 12
```

```
                    VLAN 13
```

```
List of 1 outgoing interface:
```

```
    1: Vlan-interface20
```

```
        Sub-VLAN: VLAN 21
```

```
                VLAN 22
```

Matched 19648 packets(20512512 bytes), Wrong If 0 packet
 Forwarded 19648 packets(20512512 bytes)

Table 6 Command output

Field	Description
Total 1 entry, 1 matched	Total number of (S, G) entries and total number of matching (S, G) entries.
00001	Sequence number of the (S, G) entry.
(172.168.0.2,227.0.0.1)	(S, G) entry.
Flags	<p>Entry flag.</p> <p>This field displays one flag or the sum of multiple flags. In this example, the value 0x0 means that the entry has only one flag 0x0.</p> <p>The following entries are available for an entry:</p> <ul style="list-style-type: none"> • 0x0—The entry is in correct state. • 0x1—The entry is in inactive state. • 0x2—The entry is null. • 0x4—The entry fails to update. • 0x8—Outgoing interface information fails to update for the entry. • 0x10—Data-group information fails to update for the entry. • 0x20—A register outgoing interface is available. • 0x40—The entry is to be deleted. • 0x80—The entry is in registration suppression state. • 0x100—The entry is being deleted. • 0x200—The entry is in GR state. • 0x800—The entry has the associated ARP entry for the multicast source address. • 0x2000000—The entry is a BIDIR-PIM forwarding entry.
Uptime	Length of time for which the (S, G) entry has been up.
Timeout in	Length of time in which the (S, G) entry will expire.
Incoming interface	Incoming interface of the (S, G) entry.
Incoming sub-VLAN	This field is not supported in the current software version. Incoming sub-VLAN of the super VLAN when the incoming interface of the (S, G) entry is the VLAN interface of this super VLAN.
Outgoing sub-VLAN	This field is not supported in the current software version. Outgoing sub-VLAN of the super VLAN when the incoming interface of the (S, G) entry is the VLAN interface of this super VLAN.
List of 1 outgoing interface:	Outgoing interface list of the (S, G) entry.
Sub-VLAN	This field is not supported in the current software version. Outgoing sub-VLAN of the super VLAN when the outgoing interface of the (S, G) entry is the VLAN interface of this super VLAN.
Matched 19648 packets(20512512 bytes), Wrong If 0 packet	Number of packets (bytes) that match the (S, G) entry, and number of packets with incoming interface errors.
Forwarded 19648 packets(20512512 bytes)	Number of packets (bytes) that have been forwarded.

Related commands

reset multicast forwarding-table

display multicast forwarding-table df-list

Use **display multicast forwarding-table df-list** to display information about the DF list in the multicast forwarding table.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] forwarding-table df-list [ group-address ]  
[ verbose ] [ slot slot-number ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays information about the DF list in the multicast forwarding table on the public network.

group-address: Specifies a multicast group address in the range of 224.0.0.0 to 239.255.255.255.

verbose: Specifies detailed information about the DF list in the multicast forwarding table. If you do not specify this keyword, the command displays brief information about the DF list in the multicast forwarding table.

slot *slot-number*: Specifies an IRF member device by its member ID. If you do not specify this option, the command displays information about the DF list in the multicast forwarding table on the master device.

Examples

Display brief information about the DF list in the multicast forwarding table on the public network.

```
<Sysname> display multicast forwarding-table df-list
```

```
Total 1 entry, 1 matched
```

```
00001. (0.0.0.0, 225.0.0.1)
```

```
    List of 1 DF interface:
```

```
    1: Vlan-interface1
```

Display detailed information about the DF list in the multicast forwarding table on the public network.

```
<Sysname> display multicast forwarding-table df-list verbose
```

```
Total 1 entry, 1 matched
```

```
00001. (0.0.0.0, 225.0.0.1)
```

```
    List of 1 DF interface:
```

```
    1: Vlan-interface1
```

```
        Product information: 0x347849f6, 0x14bd6837
```

```
        Tunnel information: 0xc4857986, 0x128a9c8f
```

Table 7 Command output

Field	Description
Total 1 entry, 1 matched	Total number of entries, and the total number of matching entries.
00001	Sequence number of the entry.
(0.0.0.0, 225.0.0.1)	(* , G) entry.
List of 1 DF interface	DF interface list.

display multicast routing-table

Use **display multicast routing-table** to display multicast routing entries.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] routing-table [ source-address [ mask { mask-length | mask } ] | group-address [ mask { mask-length | mask } ] | incoming-interface interface-type interface-number | outgoing-interface { exclude | include | match } interface-type interface-number ] *
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays multicast routing entries on the public network.

source-address: Specifies a multicast source address.

group-address: Specifies a multicast group address in the range of 224.0.0.0 to 239.255.255.255.

mask-length: Specifies an address mask length. The default value is 32. For a multicast group address, the value range for this argument is 4 to 32. For a multicast source address, the value range for this argument is 0 to 32.

mask: Specifies an address mask. The default is 255.255.255.255.

incoming-interface: Specifies the multicast routing entries that contain the specified incoming interface.

interface-type interface-number: Specifies an incoming interface by its type and number.

outgoing-interface: Specifies the multicast routing entries that contain the specified outgoing interface.

exclude: Specifies the multicast routing entries that do not contain the specified interface in the outgoing interface list.

include: Specifies the multicast routing entries that contain the specified interface in the outgoing interface list.

match: Specifies the multicast routing entries that contain only the specified interface in the outgoing interface list.

Usage guidelines

Multicast routing tables are the basis of multicast forwarding. You can display the establishment state of an (S, G) entry by examining the multicast routing table.

Examples

Display multicast routing entries on the public network.

```
<Sysname> display multicast routing-table
Total 1 entry

00001. (172.168.0.2, 227.0.0.1)
  Uptime: 00:00:28
  Upstream Interface: Vlan-interface1
  List of 2 downstream interfaces
    1: Vlan-interface2
    2: Vlan-interface3
```

Table 8 Command output

Field	Description
Total 1 entry	Total number of (S, G) entries.
00001	Sequence number of the (S, G) entry.
(172.168.0.2, 227.0.0.1)	(S, G) entry.
Uptime	Length of time for which the (S, G) entry has been up.
Upstream Interface	Upstream interface of the (S, G) entry that multicast packets should arrive at.
List of 2 downstream interfaces	List of downstream interfaces that need to forward multicast packets.

Related commands

reset multicast routing-table

display multicast routing-table static

Use **display multicast routing-table static** to display static multicast routing entries.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] routing-table static [ source-address { mask-length | mask } ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays static multicast routes on the public network.

source-address: Specifies a multicast source address.

mask-length: Specifies an address mask length in the range of 0 to 32.

mask: Specifies an address mask.

Usage guidelines

This command displays information about only valid static multicast routes.

Examples

Display static multicast routing entries on the public network.

```
<Sysname> display multicast routing-table static
```

```
Destinations: 3          Routes: 4
```

Destination/Mask	Pre	RPF neighbor	Interface
1.1.0.0/16	10	7.12.0.1	Vlan12
		7.11.0.1	Vlan11
2.2.2.0/24	20	7.11.0.1	Vlan11
3.3.3.3/32	50	7.12.0.1	Vlan12

Table 9 Command output

Field	Description
Destinations	Number of the multicast destination addresses.
Routes	Number of routes.
Destination/Mask	Destination address and mask length.
Pre	Route preference.
RPF neighbor	IP address of the RPF neighbor to the reachable destination.
Interface	Outgoing interface to the reachable destination.

display multicast rpf-info

Use **display multicast rpf-info** to display RPF information for multicast sources.

Syntax

```
display multicast [ vpn-instance vpn-instance-name ] rpf-info source-address [ group-address ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command displays RPF information for multicast sources on the public network.

source-address: Specifies a multicast source address.

group-address: Specifies a multicast group address in the range of 224.0.1.0 to 239.255.255.255.

Examples

```
# Display the RPF information of multicast source 192.168.1.55 on the public network.
```

```
<Sysname> display multicast rpf-info 192.168.1.55
RPF information about source 192.168.1.55:
  RPF interface: Vlan-interface1, RPF neighbor: 10.1.1.1
  Referred route/mask: 192.168.1.0/24
  Referred route type: igp
  Route selection rule: preference-preferred
  Load splitting rule: disable
```

Table 10 Command output

Field	Description
RPF neighbor	IP address of the RPF neighbor.
Referred route/mask	Referred route and its mask length.
Referred route type	Type of the referred route: <ul style="list-style-type: none">• igp—IGP unicast route.• egp—EGP unicast route.• unicast (direct)—Directly connected unicast route.• unicast—Other unicast routes, such as static unicast route.• multicast static—Static multicast route.
Route selection rule	Rule for RPF route selection: <ul style="list-style-type: none">• Route preference.• Longest prefix match.
Load splitting rule	Status of the load splitting rule: enabled or disabled.

Related commands

- **display multicast forwarding-table**
- **display multicast routing-table**

ip rpf-route-static

Use **ip rpf-route-static** to configure a static multicast route.

Use **undo ip rpf-route-static** to delete a static multicast route.

Syntax

```
ip rpf-route-static [ vpn-instance vpn-instance-name ] source-address { mask-length | mask }  
{ rpf-nbr-address | interface-type interface-number } [ preference preference ]
```

```
undo ip rpf-route-static [ vpn-instance vpn-instance-name ] source-address { mask-length | mask }  
{ rpf-nbr-address | interface-type interface-number }
```

Default

No static multicast route exists.

Views

System view

Predefined user roles

network-admin

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command configures a static multicast route on the public network.

source-address: Specifies a multicast source address.

mask-length: Specifies an address mask length in the range of 0 to 32.

mask: Specifies an address mask.

rpf-nbr-address: Specifies an RPF neighbor by its IP address.

interface-type interface-number: Specifies an interface by its type and number. The interface connects the RPF neighbor.

preference: Specifies a route preference in the range of 1 to 255. The default value is 1.

Usage guidelines

In the same multicast source address range, you can configure up to 16 RPF neighbors.

When you specify an RPF neighbor on a Layer 3 interface, you must specify the *rpf-nbr-address* argument rather than the *interface-type interface-number* argument. Layer 3 interfaces include Layer 3 Ethernet, Layer 3 aggregate, Loopback, and VLAN interfaces.

The configured static multicast route might not take effect due to one of the following reasons:

- The outgoing interface iteration fails.
- The specified interface is not in the public network or the same VPN instance as the current interface.
- The specified interface is not a point-to-point interface.
- The specified interface is in down state.

If multiple static multicast routes within the same multicast source address range are available, only the one with the highest route preference can become active. Therefore, after you configure a static multicast route, use the **display multicast routing-table static** command to verify that the configured static multicast route has taken effect.

The **undo ip rpf-route-static** command deletes the specified static multicast route, but the **delete ip rpf-route-static** command deletes all static multicast routes.

Examples

On the public network, configure a static multicast route to multicast source groups 10.1.1.1/24, and specify a router with IP address 192.168.1.23 as its RPF neighbor.

```
<Sysname> system-view
```

```
[Sysname] ip rpf-route-static 10.1.1.1 24 192.168.1.23
```

Related commands

- **delete ip rpf-route-static**
- **display multicast routing-table static**

load-splitting (MRIB view)

Use **load-splitting** to enable multicast load splitting.

Use **undo load-splitting** to restore the default.

Syntax

```
load-splitting { source | source-group }
```

```
undo load-splitting
```

Default

Multicast load splitting is disabled.

Views

MRIB view

Predefined user roles

network-admin

Parameters

source: Specifies load splitting on a per-source basis.

source-group: Specifies load splitting both on a per-source basis and on a per-group basis.

Usage guidelines

This command does not take effect on BIDIR-PIM.

Examples

```
# Enable multicast load splitting on a per-source basis on the public network.
<Sysname> system-view
[Sysname] multicast routing
[Sysname-mrib] load-splitting source
```

longest-match (MRIB view)

Use **longest-match** to specify the longest prefix match principle for RPF route selection.

Use **undo longest-match** to restore the default.

Syntax

longest-match

undo longest-match

Default

Route preference is used for RPF route selection

Views

MRIB view

Predefined user roles

network-admin

Usage guidelines

This command enables the switch to use the matching route with the longest prefix as the RPF route.

Examples

```
# Specify the longest prefix match principle for RPF route selection on the public network.
<Sysname> system-view
[Sysname] multicast routing
[Sysname-mrib] multicast longest-match
```

mac-address multicast

Use **mac-address multicast** to configure a static multicast MAC address entry.

Use **undo mac-address multicast** to delete a static multicast MAC address entry.

Syntax

In system view:

```
mac-address multicast mac-address interface interface-list vlan vlan-id  
undo mac-address [ multicast] [[ mac-address [ interface interface-list] ] vlan vlan-id ]
```

In Ethernet interface view or Layer 2 aggregate interface view:

```
mac-address multicast mac-address vlan vlan-id  
undo mac-address [ multicast] mac-address vlan vlan-id
```

Default

No static multicast MAC address entry is configured.

Views

System view, Ethernet interface view, Layer 2 aggregate interface view

Predefined user roles

network-admin

Parameters

mac-address: Specifies a multicast MAC address, in the format H-H-H. The multicast MAC address that can be manually configured in the multicast MAC address entry must be unused. A multicast MAC address is the MAC address in which the least significant bit of the most significant octet is 1.

interface *interface-list*: Specifies a list of interfaces. You can specify up to four single interfaces, interface ranges, or combinations of both for the list. A single interface takes the form of *interface-type interface-number*. An interface range takes the form of *interface-type interface-number to interface-type interface-number*, where the end interface number must be greater than the start interface number.

vlan *vlan-id*: Specifies a VLAN by its VLAN ID in the range of 1 to 4094. The specified VLAN must exist, and the system gives a prompt if the specified interface does not belong to the VLAN.

Usage guidelines

You can configure static multicast MAC address entries on the specified interface in system view or on the current interface in interface view.

If you do not specify the **multicast** keyword, the **undo mac-address** command deletes all MAC address entries, including static unicast and multicast MAC address entries.

Examples

```
# Create a multicast entry for 0100-0001-0001 in VLAN 2, and configure Ten-GigabitEthernet 1/0/1 through Ten-GigabitEthernet 1/0/5 in VLAN 2 as outgoing ports.
```

```
<Sysname> system-view
```

```
[Sysname] mac-address multicast 0100-0001-0001 interface ten-gigabitethernet 1/0/1 to ten-gigabitethernet 1/0/5 vlan 2
```

```
# Configure a multicast entry for 0100-0001-0001 on Ten-GigabitEthernet 1/0/1 in VLAN 2.
```

```
<Sysname> system-view
```

```
[Sysname] interface ten-gigabitethernet 1/0/1
```

```
[Sysname-Ten-GigabitEthernet1/0/1] mac-address multicast 0100-0001-0001 vlan 2
```

Related commands

```
display mac-address multicast
```

multicast boundary

Use **multicast boundary** to configure a multicast forwarding boundary.

Use **undo multicast boundary** to remove a multicast forwarding boundary.

Syntax

multicast boundary *group-address* { *mask-length* | *mask* }

undo multicast boundary { *group-address* { *mask-length* | *mask* } | **all** }

Default

No multicast forwarding boundary is configured.

Views

Interface view

Predefined user roles

network-admin

Parameters

group-address: Specifies a multicast group address in the range of 224.0.0.0 to 239.255.255.255.

mask-length: Specifies an address mask length in the range of 4 to 32.

mask: Specifies an address mask.

all: Specifies all forwarding boundaries configured on the interface.

Usage guidelines

A multicast forwarding boundary sets the boundary condition for the multicast groups in the specified address range. If the destination address of a multicast packet matches the set boundary condition, the packet is not forwarded.

You do not need to enable IP multicast routing before executing this command.

An interface can act as a forwarding boundary for multiple multicast groups in different address ranges. To achieve this, use this command on the interface for each multicast address range.

Assume that Set A and Set B are multicast forwarding boundary sets with different address ranges, and B is a subset of A. A takes effect on the interface no matter whether A is configured earlier or later than B.

Examples

```
# Configure VLAN-interface 100 as the forwarding boundary of multicast groups in the range of 239.2.0.0/16.
```

```
<Sysname> system-view
```

```
[Sysname] interface vlan-interface 100
```

```
[Sysname-Vlan-interface100] multicast boundary 239.2.0.0 16
```

Related commands

display multicast boundary

multicast routing

Use **multicast routing** to enable IP multicast routing and enter MRIB view.

Use **undo multicast routing** to disable IP multicast routing.

Syntax

```
multicast routing [ vpn-instance vpn-instance-name ]  
undo multicast routing [ vpn-instance vpn-instance-name ]
```

Default

IP multicast routing is disabled.

Views

System view

Predefined user roles

network-admin

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command enables IP multicast routing on the public network.

Usage guidelines

Other Layer 3 multicast commands take effect only when IP multicast routing is enabled.

The switch does not forward multicast packets before IP multicast routing is enabled.

Examples

```
# Enable IP multicast routing and enter MRIB view on the public network.
```

```
<Sysname> system-view  
[Sysname] multicast routing  
[Sysname-mrib]
```

```
# Enable IP multicast routing and enter MRIB view in VPN instance mvpn.
```

```
<Sysname> system-view  
[Sysname] multicast routing vpn-instance mvpn  
[Sysname-mrib-mvpn]
```

reset multicast forwarding event

Use **reset multicast forwarding event** to clear statistics for multicast forwarding events.

Syntax

```
reset multicast [ vpn-instance vpn-instance-name ] forwarding event
```

Views

User view

Predefined user roles

network-admin

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command clears statistics for the multicast forwarding events on the public network.

Examples

```
# Clear statistics for the multicast forwarding events on the public network.
```

```
<Sysname> reset multicast forwarding event
```

Related commands

display multicast forwarding event

reset multicast forwarding-table

Use **reset multicast forwarding-table** to clear the multicast forwarding entries.

Syntax

```
reset multicast [ vpn-instance vpn-instance-name ] forwarding-table { { source-address [ mask { mask-length | mask } ] | group-address [ mask { mask-length | mask } ] | incoming-interface { interface-type interface-number } } * | all }
```

Views

User view

Predefined user roles

network-admin

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command clears the multicast forwarding entries on the public network.

source-address: Specifies a multicast source address.

group-address: Specifies a multicast group address in the range of 224.0.0.0 to 239.255.255.255.

mask-length: Specifies an address mask length. The default value is 32. For a multicast group address, the value range for this argument is 4 to 32. For a multicast source address, the value range for this argument is 0 to 32.

mask: Specifies an address mask. The default is 255.255.255.255.

incoming-interface: Specifies the multicast forwarding entries that contain the specified incoming interface.

interface-type interface-number: Specifies an incoming interface by its type and number.

all: Specifies all multicast forwarding entries.

Usage guidelines

When a forwarding entry is deleted from the multicast forwarding table, the associated routing entry is also deleted from the multicast routing table.

Examples

```
# Clear the multicast forwarding entries for multicast group 225.5.4.3 on the public network.
```

```
<Sysname> reset multicast forwarding-table 225.5.4.3
```

Related commands

display multicast forwarding-table

reset multicast routing-table

Use **reset multicast routing-table** to clear the multicast routing entries.

Syntax

```
reset multicast [ vpn-instance vpn-instance-name ] routing-table { { source-address [ mask { mask-length | mask } ] | group-address [ mask { mask | mask-length } ] | incoming-interface interface-type interface-number } * | all }
```

Views

User view

Predefined user roles

network-admin

Parameters

vpn-instance *vpn-instance-name*: Specifies a VPN instance by its name, a case-sensitive string of 1 to 31 characters. If you do not specify a VPN instance, this command clears the multicast routing entries on the public network.

source-address: Specifies a multicast source address.

group-address: Specifies a multicast group address in the range of 224.0.0.0 to 239.255.255.255.

mask-length: Specifies an address mask length. The default value is 32. For a multicast group address, the value range for this argument is 4 to 32. For a multicast source address, the value range for this argument is 0 to 32.

mask: Specifies an address mask. The default is 255.255.255.255.

incoming-interface: Specifies the routing entries that contain the specified incoming interface.

interface-type interface-number: Specifies an incoming interface by its type and number.

all: Specifies all multicast routing entries.

Usage guidelines

When a routing entry is deleted from the multicast routing table, the associated forwarding entry is also deleted from the multicast forwarding table.

Examples

Clear the multicast routing entries for multicast group 225.5.4.3 on the public network.

```
<Sysname> reset multicast routing-table 225.5.4.3
```

Related commands

display multicast routing-table