

MLD-Snooping Configuration

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Chapter 1 MLD-Snooping Configuration

1.1 IPv6 Multicast Overview

The task of MLD snooping is to maintain the forwarding relationship of IPv6 group addresses in VLAN and synchronize with the change of the multicast group, enabling the data to be forwarded according to the topology of the multicast group. Its functions include monitoring MLD-snooping packets, maintaining the table between group address and VLAN, keep the MLD-snooping host the same with the MLD-snooping router and solve the flooding problems.

When a L2 device has not got MLD snooping run, the multicast data will be broadcast at the second layer; when the L2 device gets MLD snooping run, the multicast data of the known multicast group will not be broadcast at the second layer but be sent to the designated receiver, and the unknown multicast data will be dropped.

Note:

Because MLD-Snooping realizes the above functions by listening the query message and report message of MLD-Snooping, MLD-Snooping can function properly only when it works on the multicast router, that is, the switch must periodically receive the MLD-Snooping query information from the router. The router age timer of MLD-Snooping must be set to a time value that is bigger than the group query period of the multicast router connecting MLD-Snooping. You can check the multicast router information in each VLAN by running `show ipv6 mld-snooping`.

1.2 MLD-Snooping Multicast Configuration Tasks

- Enabling/Disabling MLD-Snooping
- Enabling/Disabling the Solicitation of Hardware Forward of Multicast Group
- Adding/Deleting the Static Multicast Address of VLAN
- Setting Router Age Timer of MLD-Snooping
- Setting Response Time Timer of MLD-Snooping
- Setting the Port of the Static Multicast Router
- Setting the Immediate Leave Function
- Monitoring and Maintaining MLD-Snooping

1.2.1 Enabling/Disabling MLD-Snooping Multicast

Run the following commands in global configuration mode.

Command	Purpose
ipv6 mld-snooping	Enables MLD snooping multicast.

no ipv6 mld-snooping	Disables MLD snooping.
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Note:

After MLD-Snooping is enabled, when DLF occurs on multicast packets (that is, the destination address is not registered in the swap chip through the MLD-Snooping), all multicast packets whose destination addresses are not registered on any port will be dropped.

1.2.2 Enabling/Disabling the Solicitation of Hardware Forward of Multicast Group

Run the following commands in global configuration mode.

Command	Purpose
ipv6 mld-snooping solicitation	Enables the solicitation of hardware forward of multicast group.
no ipv6 mld-snooping solicitation	Disables the solicitation of hardware forward of multicast group.

1.2.3 Adding/Deleting the Static Multicast Address of VLAN

The static multicast address can make some MLD-Snooping hosts receive the corresponding multicast packets.

Run the following commands in global configuration mode.

Command	Purpose
ipv6 mld-snooping vlan <i>vlan_id</i> static <i>X:X:X:X::X</i> interface <i>intf_name</i>	Adds the static multicast address of VLAN.
no ipv6 mld-snooping vlan <i>vlan_id</i> static <i>X:X:X:X::X</i> interface <i>intf_name</i>	Deletes static multicast address of VLAN.

1.2.4 Setting Router Age Timer of MLD-Snooping

The router age timer is used to monitor whether the MLD-Snooping querier exists or not; the MLD-Snooping querier maintenance is used to maintain and manage the multicast address by sending the query packets and MLD-Snooping works by independence on the communication between MLD-Snooping querier and host.

Run the following commands in global configuration mode.

Command	Operation
ipv6 mld-snooping timer router-age <i>timer_value</i>	Sets the router age of MLD-Snooping.
no ipv6 mld-snooping timer router-age	Resumes the default router age of MLD-Snooping.

Note:

The settings of the timer requires to refer to the query period settings of the MLD-Snooping querier for it cannot be smaller than the query period; you are recommended to set the router age timer to the triple of the query period.

By default the router age timer is set to be 260 seconds of MLD-Snooping.

1.2.5 Setting Response Time Timer of MLD-Snooping

The Response Time timer means the threshold time for the host to report the multicast after MLD-Snooping querier sends the query packets; if this report packet is not received after the timer ages, the switch will delete this multicast address.

Run the following commands in global configuration mode.

Command	Operation
ipv6 mld-snooping timer response-time <i>timer_value</i>	Sets the value of the response time of MLD-Snooping.
no ipv6 mld-snooping timer response-time	Resumes the default value of the response time of MLD-Snooping.

Note:

The value of the timer cannot be set too small, or the multicast communication may be unstable.

By default the response time is set to be 10 seconds of MLD-Snooping.

1.2.6 Configuring Querier of MLD-Snooping

If the multicast router does not exist in VLAN where MLD-snooping is activated, the querier function of MLD-snooping can be used to imitate the multicast router to regularly send MLD-snooping query message. (The function is global, that is, it can be enabled or disabled in VLAN where MLD-snooping is globally enabled)

When the multicast router does not exist in LAN and multicast flow does not need routing, the automatic query function of the switch can be activated through MLD-snooping, enabling MLD-snooping to work properly.

Run the following commands in global configuration mode.

Command	Operation
[no] ipv6 mld-snooping querier [address [ip_addr]]	Configures the querier of MLD-snooping. The optional parameter address is the source IP address of query message.

The IGMP-snooping querier function is disabled by default. By default, the source IP address of the fake Query packet is FE80::3FF:FEFE:FD00:1.

Note:

If the querier function is enabled, the function is disabled when the multicast router exists in VLAN; the function can be automatically activated when the multicast router times out.

1.2.7 Setting the Port of the Static Multicast Router

After a port is set to be a static multicast port, all the MLD-Snooping report packets and done packets will be transmitted to this port.

Run the following commands in global configuration mode.

Command	Operation
ipv6 mld-snooping vlan <i>WORD</i> mrouter interface <i>inft_name</i>	Sets the static multicast router's port of MLD snooping in Vlan word.
no ipv6 mld-snooping vlan <i>WORD</i> mrouter interface <i>inft_name</i>	Deletes the static multicast router's port of MLD snooping in Vlan word.

1.2.8 Enabling/Disabling Immediate Leave

Run the following commands in global configuration mode.

Command	Purpose
ipv6 mld-snooping vlan <i>WORD</i> immediate-leave	Enables the immediate-leave functionality.
no ipv6 mld-snooping vlan <i>WORD</i> immediate-leave	Resumes the default settings.

1.2.9 Monitoring and Maintaining MLD-Snooping Multicast

Run the following commands in EXEC mode:

Command	Operation
show ipv6 mld-snooping	Displays the configuration of MLD-Snooping.
show ipv6 mld-snooping timer	Displays the clock of MLD-Snooping.
show ipv6 mld -snooping groups	Displays the multicast group of MLD-Snooping.
show ipv6 mld-snooping statistics	Displays the statistics information of MLD-Snooping.
show ipv6 mld-snooping vlan	Displays the configuration of MLD-Snooping in VLAN.
show ipv6 mld-snooping mac	Displays the multicast MAC addresses recorded by MLD snooping.

The MLD-Snooping information is displayed below:

Switch#show ipv6 mld-snooping

Global MLD snooping configuration:

```
-----
Globally enable    : Enabled
Querier           : Enabled
Querier address    : FE80::3FF:FEFE:FD00:1
Router age        : 260 s
Response time     : 10 s
Handle Solicitation : Disabled
```

Vlan 1:

```
-----
Running
Routers: SWITCH(querier);
```

Displays the multicast group of MLD-Snooping.

Switch#show ipv6 mld--snooping groups

```
Vlan Group      Type Port(s)
-----
1 FF02::1:FF32:1B9B MLD G0/3
1 FF02::1:FF00:2 MLD G0/3
1 FF02::1:FF00:12 MLD G0/3
1 FF02::1:FF13:647D MLD G0/3
2 FF02::1:FF00:2 MLD G0/2
2 FF02::1:FF61:9901 MLD G0/2
```

Displays MLD-Snooping Snooping Timer

Switch#show ipv6 mld-snooping timers

vlan 1 Querier on port 0 : 251

#

Querier on port 0: 251 means the timeout time of the ageing timer of the router.

vlan 2 multicast address 3333.0000.0005 response time : this shows the time period from receiving a multicast query packet to the present; if there is no host to respond when the timer times out, the port will be canceled.

The MLD-snooping statistics information is displayed below:

Switch#show ipv6 mld-snooping statistics

vlan 1

```
-----
v1_packets:0    quantity of v1 packets
v2_packets:6    quantity of v2 packets
general_query_packets:5  Quantity of general query packets
special_query_packets:0  Quantity of special query packets
listener_packets:6  Quantity of Report packets
done_packets:0    Quantity of Leave packets
```

```
send_query_packets:0    Quantity of sending packets
err_packets:0          Quantity of error packets
```

Displays multicast mac information of the operating MLD-Snooping

Switch#show ipv6 mld-snooping mac

Vlan	Mac	Ref	Flags
1	3333:0000:0001	1	2
2	3333:ff61:9901	1	0
	FF02::1:FF61:9901		
1	3333:0000:0002	1	2
1	3333:ff00:0002	1	0
	FF02::1:FF00:2		
1	3333:ff00:0012	1	0
	FF02::1:FF00:12		
1	3333:ff13:647d	1	0
	FF02::1:FF13:647D		
1	3333:ff32:1b9b	1	0
	FF02::1:FF32:1B9B		
2	3333:ff00:0002	1	0
	FF02::1:FF00:2		
1	3333:ff00:0001	1	2
1	3333:ff8e:7000	1	2