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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 solves the above-mentioned problems by monitoring the Query or Report packets of MLD-Snooping, MLD snooping can work normally only when there exists the multicast router, which means the switch must periodically receive the MLD-Snooping query message from the router. Therefore, the router age timer setting of MLD-Snooping must be larger than the group query period of the multicast router connected to it. You can see the multicast router information in each vlan, using the **show ipv6 mdl-snooping** command.

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.

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Command	Purpose
ipv6 mld-snooping	Enables MLD snooping multicast.
no ipv6 mld-snooping	Disables MLD snooping.

Note:

After MLD-Snooping is enabled and the multicast packets fail to be found, the multicast packets whose destination addresses are not registered are 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/Canceling the Static Multicast Address of VLAN

The static multicast address configuration allows some hosts that do not support the MLD-Snooping protocol to receive the corresponding group packets.

Run the following commands in global configuration mode.

Command	Purpose
ipv6 mld-snooping vlan *vlan_id* **static** *X:X:X:X::X* **interface** *intf_name*	Adds the static multicast address of VLAN.
no ipv6 mld-snooping vlan *vlan_id* **static** *X:X:X:X::X* **interface** *intf_name*	Removes the static multicast address of VLAN.

1.2.4 Setting Router Age Timer of MLD-Snooping

The Router Age timer is used to monitor the existence of an MLD-Snooping querying party. The MLD-Snooping querying party maintains and manages the multicast address by sending query packets. MLD-Snooping relies on the communication between the MLD-Snooping querying party and the host.

Run the following commands in global configuration mode.

Command	Purpose

ipv6 mld-snooping timer router-age *timer_value*	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 this timer shall refer to the query period settings of MLD-Snooping and be larger than the query period. It is recommended to set the router age timer to be triple of the query period.

The default router age of MLD snooping is 260 seconds.

1.2.5   Setting Response Time Timer of MLD-Snooping

Response Time timer is the latest Time for the host to report multicast after the MLD-Snooping interrogator sends the query packet. If the report message has not been received any packet after the timer aging, the switch will delete the multicast address.

Run the following commands in global configuration mode.

Command	Purpose
ipv6 mld-snooping timer response-time *timer_value*	Sets the response time of MLD-Snooping.
no ipv6 mld-snooping timer response-time	Resumes the default response time of MLD-Snooping.

Note:

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

The default response time of MLD snooping is 10 seconds.

1.2.6   Setting Querier of MLD-Snooping

If there is no multicast router in enabling VLAN with MLD-snooping, enable Querier of MLD-snooping module (which acts as a virtualized multicast router) to forward IGMP group query packets regularly. (The function can only be enabled or disabled when all VLANs enable MLD-snooping)

When there is no multicast router in the LAN and the multicast flow has no need for routing, run **MLD-snooping querier** command to activate the self-query of the switch.

Run following command in global configuration mode:

Command	Purpose
[**no**] **ipv6 mld-snooping querier** [**address** *[ip_addr]*]	Sets Querier of MLD-snooping. Selects the address of the optional parameter as the source IP of the Query packet.

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

Note:

Enable Querier, if there is a multicast router in the VLAN, the function becomes invalid automatically; if the multicast router is timeout, the function become valid automatically.

1.2.7 Setting the Port of the Static Multicast Router

Once a port is configured as a static multicast router port, all MLD-Snooping report and done messages received are forwarded to that port.

Run the following commands in global configuration mode.

Command	Operation
ipv6 mld-snooping vlan *WORD* **mrouter** interface *inft_name*	Sets the static multicast router's port of MLD snooping in Vlan **word**.
no ipv6 mld-snooping vlan *WORD* **mrouter** interface *inft_name*	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 *WORD* **immediate-leave**	Enables the immediate-leave functionality.
no ipv6 mld-snooping vlan *WORD* **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.

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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:

```
#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);
```

The multicast group of MLD-Snooping is displayed blow:

```
#show ipv6 mld--snooping groups

Vlan Group            Type Port(s)
---- -------------- ---- -----------------------------------
   1 FF02::1:FF32:1B9B MLD    G2/23
   1 FF02::1:FF00:2    MLD    G2/23
   1 FF02::1:FF00:12 MLD    G2/23
   1 FF02::1:FF13:647D MLD    G2/23
   2 FF02::1:FF00:2    MLD    G2/22
   2 FF02::1:FF61:9901 MLD    G2/22
```

The timer of MLD-Snooping is displayed blow:

```
Switch#show ipv6 mld-snooping timer

vlan 1 Querier on port 0 : 251
#
```
Querier on port 0: 251   meaning the router age timer times out.

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> **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:

```
#show ipv6 mld-snooping statistics
 vlan 1
-----------
    v1_packets:0           quantity of v1 packets
    v2_packets:6           quantity of v2 packets
    v3_packets:0           quantity of v3 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
    err_packets:0        Quantity of error packets
```

The MLD-Snooping proxying is displayed below:

```
 #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
```