

FSOS

MLD Snooping Configuration

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1. MLD Snooping

1.1 MLD Snooping Overview

MLD (Multicast Listener Discovery) Internet Group Management Protocol is part of the IPv6 protocol, to support and manage hosts and multicast routers IP multicast. IP Multicast allows the transmission of IP packets to a multicast group constitutes a set of host, multicast group membership relationship is dynamic, host can dynamically join or leave the group, so to minimize the network load, effective online data transfer.

MLD Snooping is used to monitor hosts and routers between the MLD messages, according to group members join, leave, and dynamically create, maintain and delete the multicast address table, this time, multicast frames based on their respective multicast address table be forwarded.

1.2 Configuring MLD Snooping

1.2.1 MLD Snooping Configuration Task List

Table 8-1 MLD Snooping Configuration Task List

Configuration Tasks		Remark
Basic MLD Snooping Configuration	Start MLD Snooping	Required
Adjust and optimize the MLD Snooping Configuration	Configure dynamic multicast member port aging time	Optional
	Configure the maximum response time to leave	Optional
	Fast-leave configuration port	Optional
	Maximum number of learning multicast configuration port	Optional
	Configuring MLD-Snooping Multicast Learning Strategies	Optional
	Configuring MLD-Snooping querier	Optional
	Configuring Routing port	Optional
	Multicast VLAN port configuration	Optional
Display and maintenance of MLD Snooping		Optional

1.2.2 Start MLD Snooping

Table 8-2 Start MLD Snooping

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Start MLD Snooping	mld-snooping	Required

1.2.3 Configuring MLD Snooping Timer

Table 8-3 Configuring IGMP Snooping Timer

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Configure dynamic multicast member port aging time	mld-snooping <i>host-aging-time</i> time	Optional Default configuration, the dynamic aging time of multicast member ports 300S
Configure the maximum response time to leave	mld-snooping <i>max-response-time</i> time	Optional Default configuration, the maximum response time to leave the 10S

1.2.4 Fast-leave Configuration Port

Under normal circumstances, MLD-Snooping in MLD leave message is received directly will not remove the port from the multicast group, but to wait some time before the port from the multicast group.

Start quickly delete function, MLD-Snooping received MLD leave message, the direct port from the multicast group. When the port is only one user, it can be quickly removed to save bandwidth.

Table 8-4 Fast-leave configuration port

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Enter port configuration mode	interface ethernet <i>interface-num</i>	-

Fast-leave configuration port	mld-snooping fast-leave	Optional Default configuration, port fast-leave is disabled
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1.2.5 Maximum Number of Learning Multicast Configuration Port

You can use the following command to set up each port can learn the number of multicast.

Table 8-5 Maximum number of learning multicast configuration port

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Enter port configuration mode	interface ethernet <i>interface-num</i>	-
Configured port number of the largest study of multicast	mld-snooping group-limit <i>number</i>	Optional Default configuration, the maximum learning of multicast port number NUM_MULTICAST_GROUPS

Caution:

NUM_MULTICAST_GROUPS refers to the machine can learn the maximum number of multicast, each product NUM_MULTICAST_GROUPS may be different. Although theoretically a maximum of learning multicast port number NUM_MULTICAST_GROUPS, but also that other ports can learn the number of multicast will be occupied. In other words, all the ports will share this NUM_MULTICAST_GROUPS multicast group resources.

1.2.6 Configuring MLD Snooping Multicast Learning Strategies

Configured multicast learning strategies, the administrator can control the router only to learn the specific multicast group. If a multicast group is added to the blacklist, then the router will not learn the multicast group; the contrary, in the white list in the multicast group of routers can be learned.

Table 8-6 Configuring MLD Snooping Multicast Learning Strategies

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Configuration is not black and white list in	mld-snooping {permit deny} {group all vlan <i>vid</i>}	Optional Default

the multicast group to learn the rules of the default		configuration, not black and white list in the multicast group to learn the rules for the learning of all multicast group
Enter port configuration mode	interface ethernet <i>interface-num</i>	-
Configure the port multicast black list	mld-snooping {permit deny} group-range <i>MAC multi-count num vlan vid</i>	Optional Configure the port to learn (not learn) vid of the start of continuous num mac multicast groups
	mld-snooping {permit deny} group <i>MAC vlan vid</i>	Optional Default configuration, any multicast group are not black and white list are added

1.2.7 Configuring MLD-Snooping querier

After running the MLD protocol multicast network, there will be a full-time query multicast router or Layer 3 multicast router is responsible for sending MLD query.

However, MLD does not support Layer 2 switch function, so no way to query device capabilities, universal group can't send query message. Users can configure MLD-Snooping querier, the switch to the second floor take the initiative in the data link layer to send general queries, messages, in order to establish and maintain multicast forwarding entry.

Users can also configure the MLD Snooping querier sends general query messages with the source address, the maximum response time and query cycle.

Table 8-7 Configuring MLD-Snooping querier

Operation	Command	Remarks
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Enter global configuration mode	configure terminal	-
On MLD-Snooping querier	mld-snooping querier	Required
Configured to send general query message interval	mld-snooping query-interval <i>interval</i>	Optional
Configuration is generally the maximum query response time of message	mld-snooping query-max-respond <i>time</i>	Optional

1.2.8 Configuring Routing Port

You can configure the router port will be automatically added to the dynamic MLD Snooping Multicast learn to make routing port also has a multicast packet forwarding capability.

When the switch receives a host membership report sent packets, the port will be forwarded to the route.

Table 8-8 Configuring Routing port

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Hybrid routing port configuration function	mld-snooping route-port forward	Optional
Configure dynamic routing port aging time	mld-snooping router-port-age {on off <i>age-time</i> }	Optional
Configure static routing port	mld-snooping route-port vlan <i>vid interface</i> {all ethernet <i>interface-num</i> }	Optional

1.2.9 Multicast VLAN Port Configuration

Multicast VLAN on the port function, regardless of the port received MLD messages belong to which VLAN, the switch will be modified as a multicast VLAN.

Table 8-9 Multicast VLAN port configuration

Operation	Command	Remarks
Enter global configuration mode	configure terminal	-
Enter port configuration mode	interface ethernet <i>interface-num</i>	-
Multicast VLAN port	mld-snooping multicast vlan <i>vid</i>	Optional

configuration		
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1.2.10 Display and Maintenance of MLD Snooping

After completing the above configuration, can use the following command to view configuration.

Table 8-10 Display and maintenance of MLD Snooping

Operation	Command	Remarks
See related MLD Snooping Configuration	show mld-snooping	Perform either of the commands
See dynamic routing port	show mld-snooping router-dynamic	
View static router port configuration	show mld-snooping router-static	
View multicast group	show mld-snooping group	

1.3 MLD Snooping Configuration Examples

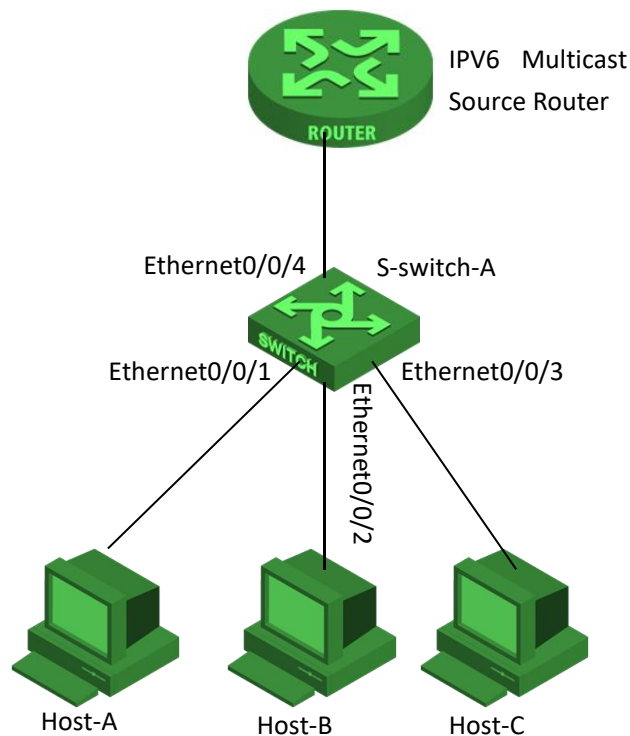


Figure 1

1. Network requirements

As shown in the figure 1-1, Host-A, Host-B, Host-C hosts separately belong to VLAN2, VLAN3, VLAN4. Three hosts separately receive the data of the multicast address FF02::01::0101-FF02::01::0103 per configuring.

2. Configuration steps

Configuring S-switch-A

Configure VLAN2 to 4, and add the ports separately into VLAN2, 3, 4 of Ethernet0/0/1, Ethernet0/0/2 and Ethernet0/0/3.

```
S-switch-A(config)#vlan 2
```

```
S-switch-A(config-if-vlan)#switchport ethernet 0/0/1
```

```
S-switch-A(config-if-vlan)#exit
```

```
S-switch-A(config)#vlan 3
```

```
S-switch-A(config-if-vlan)#switchport ethernet 0/0/2
```

```
S-switch-A(config-if-vlan)#exit
```

```
S-switch-A(config)#vlan 4
```

```
S-switch-A(config-if-vlan)#switchport ethernet 0/0/3
```

```
S-switch-A(config-if-vlan)#exit
```

#Enable MLD snooping

```
S-switch-A(config)#mld-snooping
```

When Host-A, Host-B, Host-C forward MLD report to S-switch-A, S-switch-A will learn corresponding multicast table entry port; When the IPV6 Multicast Source Router send IGMP query time to the S-switch-A message, S-switch-A will learn the appropriate router port entry

Show the switch learned multicast group

```
S-switch-A(config)#show mld-snooping group
```

```
show multicast table information
```

```
MAC Address : 33:33:00:01:00:01
```

```
VLAN ID      : 2
```

```
port list    : e0/0/1.
```

```
MAC Address : 33:33:00:01:00:02
```

```
VLAN ID      : 3
```

```
port list    : e0/0/2.
```

MAC Address : 33:33:00:01:00:03

VLAN ID : 4

port list : e0/0/2.

Total entries: 3 .

S-switch-A(config)#show mld-snooping router-dynamic

Port	VID	Age	Type
e0/0/4	2	284	{ STATIC }
e0/0/4	3	284	{ STATIC }
e0/0/4	4	284	{ STATIC }

Total Record: 3

When Multicast Source Router sends FF02::01::0101-FF02::01::0103 multicast serve data flow, S-switch-A will forward corresponding to Host-A, Host-B, Host-C.