

Sun Ethernet Fabric Operating System

MLDS Administration Guide



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Using This Documentation

MLDS software is an implementation of the MLDS mechanism. The software snoops MLD v1 and v2 packets to regulate the multicast traffic to the layer 2 segment of the network. Multicast traffic is allowed to fall through only on downstream ports where listeners are present.

This document explains the MLDS configuration as a part of SEFOS. You are expected to have a basic knowledge of the protocol before using the functions described in this document.

- “Product Notes” on page 1
- “Related Documentation” on page 2
- “Acronyms and Abbreviations” on page 2
- “CLI Command Modes” on page 3
- “Feedback” on page 3
- “Support and Accessibility” on page 4

Product Notes

For late-breaking information and known issues about the following products, refer to the product notes at:

Sun Blade 6000 Ethernet Switched NEM 24p 10GbE:

<http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE>

Sun Network 10GbE Switch 72p:

<http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p>

Related Documentation

Documentation	Links
All Oracle products	http://oracle.com/documentation
Sun Blade 6000 Ethernet Switched NEM 24p 10GbE	http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE
Sun Network 10GbE Switch 72p	http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p
Sun Blade 6000 modular system	http://www.oracle.com/pls/topic/lookup?ctx=sb6000
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	http://www.oracle.com/pls/topic/lookup?ctx=ilom30

For detailed information about the commands and options described in this document, refer to the *Sun Ethernet Fabric Operating System CLI Base Reference Manual*.

Acronyms and Abbreviations

Acronym or Abbreviation	Explanation
CLI	Command-line interface
DUT	Device under test
GARP	Generic Attribute Registration Protocol
GMRP	GARP Multicast Registration Protocol
IGMP	Internet Group Management Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
MAC	Media access control
MLDS	Multicast listener discovery snooping

Acronym or Abbreviation	Explanation
MSTP	Multiple Spanning Tree Protocol
RSTP	Rapid Spanning Tree Protocol
SEFOS	Sun Ethernet Fabric Operating System

CLI Command Modes

The following table lists the configuration mode used in this document with the access and exit methods.

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Access SEFOS from Oracle ILOM with read-only rights (privilege level 1).	SEFOS>	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Privileged EXEC	Access SEFOS from Oracle ILOM with full administrative rights (privilege level 15).	SEFOS#	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Global Configuration	From User EXEC mode, use the <code>enable</code> command.	SEFOS(config)#	Use the <code>end</code> command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the <code>interface interface-type interface-id</code> command.	SEFOS(config-if)#	Use the <code>exit</code> command to return to Global Configuration mode, or use the <code>end</code> command to return to Privileged EXEC mode.

Feedback

Provide feedback on this documentation at:

<http://www.oracle.com/goto/docfeedback>

Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	http://support.oracle.com
Learn about Oracle's commitment to accessibility	For hearing impaired: http://www.oracle.com/accessibility/support.html http://www.oracle.com/us/corporate/accessibility/index.html

MLDS Protocol Description

These sections describe the MLDS protocol and how to join a multicast group:

- [“Protocol Description”](#) on page 5
- [“Joining a Multicast Group”](#) on page 6
- [“MLDS Topology Example”](#) on page 6
- [“Configuration Guidelines”](#) on page 6
- [“Default Configurations”](#) on page 7

Protocol Description

MLD works with IPv6 to control the reception of multicast data in a network. MLD functions similarly to IGMP, which manages multicast groups for IPv4.

The MLDS function enables switches to forward multicast data to only those hosts that need to receive the data, rather than to all ports. MLDS allows a switch to snoop or capture information from MLD packets that are being sent back and forth between hosts and a router. Based on this information, the switch adds or deletes the multicast addresses from its address table, thereby enabling or disabling multicast traffic that is flowing to individual host ports.

In subnets where MLD is configured, MLDS manages multicast traffic at layer 2.

On a router, MLD periodically sends out MLD queries. When MLD snooping is enabled, the switch responds to the MLD queries with only one MLD join request per multicast group. The switch then creates one entry per subnet in the layer 2 forwarding table for each layer 2 multicast group from which it receives an MLD join request.

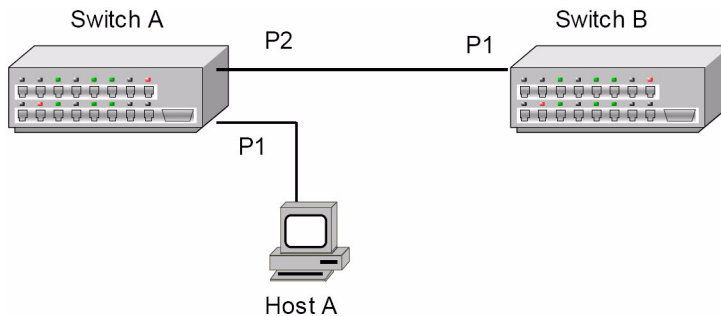
A host connected to a layer 2 interface that needs to join an IP multicast group sends an MLD join request specifying the IPv6 multicast group. When a host needs to leave the multicast group, it can either ignore the periodic MLD general queries, or it can send an MLD leave message. If the switch receives an MLD leave message from a host, the switch sends out an MLD group-specific query to determine whether any

devices connected to that interface are interested in traffic for the specific multicast group. The switch then updates the table entry for that layer 2 multicast group so that only those hosts that are interested in receiving multicast traffic for the group are listed.

Joining a Multicast Group

When a host that is connected to the switch wants to join an IPv6 multicast group, it sends an unsolicited MLD join message that specifies the IPv6 multicast group it wants to join. Alternatively, when the switch receives a general query from the router, the switch forwards the query to all ports in the VLAN. Hosts wanting to join the multicast group respond by sending a join message to the switch. The switch then creates a multicast forwarding-table entry for the group if a message is not already present. The switch also adds the interface from which the join message was received to the forwarding-table entry. The host associated with that interface receives multicast traffic for that multicast group.

MLDS Topology Example



Configuration Guidelines

- GMRP must be disabled for MLD snooping to be enabled.

- To enable fast leave on a port, the port must be connected to a host and not to a switch or hub.

Default Configurations

If the switch is rebooted for any reason, it returns to the previously saved configuration. If you have not saved a site configuration, the reboot returns the switch to the default settings. For instructions on how to save your site configuration, refer to the software configuration guide for your switch.

Feature	Default Setting
MLDS	Disabled
Multicast routers	None configured
MLDS learning method	MAC based
Proxy reporting	Enabled
Router port purge interval	125 seconds
Port purge interval	260 seconds
Report forward interval	5 seconds
Group specific query interval	2 seconds
Group specific query retry count	2
MLDS version	v2

Configuring MLDS

These sections provide an example MLDS configuration:

- [“Enabling and Disabling MLDS” on page 9](#)
- [“Configure the Multicast Forwarding Mode” on page 12](#)
- [“Configure the Snooping Version” on page 12](#)
- [“Configuring Multicast Router Ports” on page 13](#)
- [“Configuring Proxy Reporting” on page 17](#)
- [“Configuring the Port-Purge Interval” on page 18](#)
- [“Configuring Fast-Leave Processing” on page 20](#)
- [“Configuring Report Forwarding” on page 21](#)
- [“Configuring Group Query Interval” on page 24](#)
- [“Configuring Snooping Statistics” on page 26](#)
- [“Configuring Query Transmission on Topology Change” on page 29](#)
- [“Display MLD Statistics” on page 30](#)

Enabling and Disabling MLDS

You can enable MLDS globally or on a per-port basis.

- [“Enable MLDS Globally” on page 9](#)
- [“Enable MLDS in a Specific VLAN” on page 11](#)
- [“Disable MLDS” on page 11](#)

▼ Enable MLDS Globally

By default, MLDS is disabled globally. To enable MLDS, you must first disable GMRP.

1. Disable GMRP globally.

```
SEFOS# configure terminal  
SEFOS(config)# set gmrp disable
```

2. Enable MLDS globally.

```
SEFOS(config)# ipv6 mld snooping  
SEFOS(config)# end
```

3. View the configuration.

```
SEFOS# show ipv6 mld snooping globals  
  
Snooping Configuration  
-----  
MLD Snooping globally enabled  
MLD Snooping is operationally enabled  
Transmit Query on Topology Change globally disabled  
Multicast forwarding mode is MAC based  
Proxy globally disabled  
Proxy reporting globally enabled  
Filter is disabled  
Router port purge interval is 125 seconds  
Port purge interval is 260 seconds  
Report forward interval is 5 seconds  
Group specific query interval is 2 seconds  
Reports are forwarded on router ports  
Group specific query retry count is 2  
Multicast VLAN disabled  
Leave config level is Vlan based
```

4. After enabling MLDS on switch A, send an MLDS v2 report from host A (connected to the port 1 of switch A) to the multicast group 33:33:00:01:00:01, which will be learned on switch A.

5. View the entry learned on switch A.

```
SEFOS# show ipv6 mld snooping forwarding-database  
Vlan  MAC-Address  Ports  
----  -  
2     33:33:00:01:00:01  Ex0/1
```


▼ Enable MLDS in a Specific VLAN

When MLDS is enabled globally, it is enabled in all the existing VLAN interfaces. When MLD snooping is disabled globally, it is disabled in all the existing VLAN interfaces. However, you can enable MLDS on specific VLANs, as described in the following example.

In this example, MLDS is enabled on VLAN 2.

1. Specify the VLAN for which MLDS is to be enabled.

```
SEFOS# configure terminal  
SEFOS(config)# vlan 2
```

2. Enable MLDS on the specified VLAN.

```
SEFOS(config-vlan)# ipv6 mld snooping  
SEFOS(config-vlan)# end
```

3. View the configuration.

```
SEFOS# show ipv6 mld snooping vlan 2  
  
Snooping VLAN Configuration for the VLAN 2  
MLD Snooping enabled  
MLD Operating version is V2  
Fast leave is disabled  
Snooping switch is acting as Non-Querier  
Query interval is 125 seconds
```

When MLDS is globally enabled or disabled, but not enabled on VLAN 2, the second line in the output of this command is:

```
MLD Snooping disabled
```

▼ Disable MLDS

● Type.

```
SEFOS(config)# no ipv6 mld snooping
```

▼ Configure the Multicast Forwarding Mode

The snooping multicast forwarding mode can be IP-based or MAC-based. By default, multicast forwarding mode is MAC based. In this example, the snooping multicast forwarding mode is IP.

1. Configure the multicast forwarding mode.

```
SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode ip
SEFOS(config)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally disabled
MLD Snooping is operationally disabled
Multicast forwarding mode is IP based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
```

▼ Configure the Snooping Version

The snooping version for a specific VLAN can be configured as either v1 or v2. By default, the operating version of the MLDS switch for all the VLANs is v2. In this example, VLAN 4 is the VLAN for which the snooping version is to be configured, and the snooping version is 1.

1. Configure the snooping version.

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
SEFOS(config-vlan)# ipv6 mld snooping version v1
SEFOS(config-vlan)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping vlan 4

Snooping VLAN Configuration for the VLAN 4
  MLD Snooping enabled
  MLD configured version is V1
  Fast leave is disabled
  Snooping switch is configured as Non-Querier
  Snooping switch is acting as Non-Querier
  Query interval is 125 seconds
  Port Purge Interval is 260 seconds
  Max Response Code is 10000, Time is 10 seconds
```

Configuring Multicast Router Ports

Multicast router ports for a VLAN can be configured statically or learned dynamically. When a port receives a query message, that port is added to the multicast router port list.

When configuring multicast router ports for a VLAN, you can specify the amount of time after which dynamically learned router entries will be deleted. You can also configure a switch to function as a querier on a particular VLAN, and you can specify the amount of time a switch will wait to determine if hosts are still interested in a specific multicast group.

- [“Configure a Static Multicast Router Port” on page 14](#)
- [“Delete Configured Router Ports” on page 14](#)
- [“Configure Dynamically Learned Multicast Router Port Time-Out” on page 15](#)
- [“Restore the Port-Purge Interval” on page 16](#)
- [“Configure an MLDS Switch as a Querier” on page 16](#)
- [“Configure MLDS Query Interval” on page 17](#)

▼ Configure a Static Multicast Router Port

The `ipv6 mld snooping mrouter` command statically configures the router ports for a specified VLAN.

In this example, VLAN 4 is the VLAN for which the snooping version is configured, and the multicast router ports are 0/4 and 0/5.

1. Specify a static configuration for the multicast router ports.

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
SEFOS(config-vlan)# ipv6 mld snooping mrouter extreme-ethernet 0/4
SEFOS(config-vlan)# ipv6 mld snooping mrouter extreme-ethernet 0/5
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping mrouter

Vlan   Ports
-----
  4    Ex0/4(static), Ex0/5(static)
```

3. Send an MLD v1 query message on port 2.

4. View the configuration in switch A.

```
SEFOS# show ipv6 mld snooping mrouter

Vlan   Ports
-----
  4    Ex0/2(dynamic), Ex0/4(static), Ex0/5(static)
```

Note that router ports will also be learned when they receive a PIM/OSPF message from a router.

▼ Delete Configured Router Ports

- Delete a statically configured router ports for a VLAN.

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
SEFOS(config)# no ipv6 mld snooping mrouter extreme-ethernet 0/4
```

▼ Configure Dynamically Learned Multicast Router Port Time-Out

Configuring the MLDS router purge time-out deletes the dynamically learned multicast router ports if no MLD router control packets are received. Use the `mrouter-time-out` command to set the aging-out time after multicast router ports are dynamically learned, as shown in the following example.

The default value for the multicast router port time-out is 125 seconds. This example configures the value as 60. Dynamically learned router entries will be deleted after 60 seconds.

1. Configure the multicast router port time-out value.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping mrouter-time-out 60
SEFOS(config)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 60 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled

Leave config level is Vlan based
```

Note that statically configured router ports are not deleted after the router purge time interval.

▼ Restore the Port-Purge Interval

- Return the port-purge interval to its default value (260 seconds).

```
SEFOS(config)# no ipv6 mld snooping port-purge-interval
```

▼ Configure an MLDS Switch as a Querier

You can configure an MLDS switch as a querier on a particular VLAN. When you do this, the switch starts sending general queries at regular time intervals. The querier message sent by the switch will not take part in querier election. If the switch receives a query from any other router, the switch will stop acting as a querier.

In this example, VLAN 4 is the VLAN for which the switch is configured as a querier.

1. Configure the MLDS switch as a querier for a specific VLAN.

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
SEFOS(config-vlan)# ipv6 mld snooping querier
SEFOS(config-vlan)# end
```

The switch sends general queries on the member ports of VLAN 4 every 125 seconds.

2. View the configuration.

```
SEFOS# show ipv6 mld snooping

Snooping VLAN Configuration for the VLAN 4
MLD Snooping enabled
MLD Operating version is V1
Fast leave is disabled
Snooping switch is configured as Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
```

The MLDS switch stops acting as a querier on reception of general queries and resumes its querier functionality when there are no MLD routers in the network.

The MLDS switch continues acting as a querier on reception of router control messages (PIM/OSPF). The switch further continues its query when the router port is not operating and there are no router ports in the switch.

▼ Configure MLDS Query Interval

The MLDS query interval is the period of time the switch waits after sending a group-specific query to determine if hosts are still interested in a specific multicast group. You can configure the group-specific query interval for a given VLAN.

In this example, VLAN 4 is the VLAN for which the for which the query interval is configured, and the query interval is set to 65 seconds.

1. Configure the MLDS query interval.

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
SEFOS(config-vlan)# ipv6 mld snooping query-interval 65
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping

Snooping VLAN Configuration for the VLAN 4
  MLD Snooping enabled
  MLD Operating version is V1
  Fast leave is disabled
  Snooping switch is configured as Querier
  Snooping switch is acting as Querier
  Query interval is 65 seconds
```

Configuring Proxy Reporting

You can configure proxy reporting to allow reports that are received from downstream hosts to be summarized. You can also use proxy reporting to build internal membership states. An MLD proxy-reporting switch reports its own state in response to upstream queriers. Proxy reporting reduces MLD network traffic.

- [“Configure Proxy Reporting” on page 17](#)
- [“Disable Proxy Reporting” on page 18](#)

▼ Configure Proxy Reporting

By default, proxy reporting is enabled. If you have previously disabled the feature, you can re-enable it.

1. Configure proxy reporting.

```
SEFOS# configure terminal  
SEFOS(config)# ipv6 mld snooping proxy-reporting
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals  
  
Snooping Configuration  
-----  
MLD Snooping globally disabled  
MLD Snooping is operationally disabled  
Multicast forwarding mode is MAC based  
Proxy reporting globally enabled  
Router port purge interval is 125 seconds  
Port purge interval is 260 seconds  
Report forward interval is 5 seconds  
Group specific query interval is 2 seconds  
Reports are forwarded on router ports  
Group specific query retry count is 2
```

▼ Disable Proxy Reporting

- Type.

```
SEFOS(config)# no ipv6 mld snooping proxy-reporting
```

Configuring the Port-Purge Interval

When the port purge timer on a port for a particular multicast group expires, the port is removed from the forwarding list of the corresponding multicast entry in the multicast forwarding table.

- [“Configure the Port-Purge Interval” on page 19](#)
- [“Restore the Port-Purge Interval” on page 20](#)

▼ Configure the Port-Purge Interval

The default for this feature is 260 seconds. In this example, the port-purge interval is 130 seconds.

1. Configure the port-purge interval.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping port-purge-interval 130
SEFOS(config)# end
```

If an entry is learned on the forwarding database, after an interval of 130 seconds, the entry is removed from the forwarding database.

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 130 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
```

The following output is displayed prior to the configuration of the port-purge interval.

```
SEFOS# show ipv6 mld snooping forwarding-database

Vlan  MAC-Address          Ports
----  -
      4  33:33:00:01:00:01    Ex0/1
```

After 130 seconds, the output will be null. Executing the show command in this manner generates no output.

▼ Restore the Port-Purge Interval

- Return the port-purge interval to its default value (260 seconds).

```
SEFOS(config)# ipv6 mld snooping port-purge-interval
```

Configuring Fast-Leave Processing

You can configure fast-leave processing to remove the interface from the forwarding table as soon as a leave message is received by the switch on that interface, without the switch sending MAC-based general queries to the interface. The VLAN interface is pruned from the multicast tree for the multicast group specified in the original leave message.

Immediate-leave processing ensures optimal bandwidth management for all hosts on a switched network, even when multiple multicast groups are simultaneously in use.

- [“Enable Fast-Leave Processing” on page 20](#)
- [“Disable Fast-Leave Processing” on page 21](#)

▼ Enable Fast-Leave Processing

The fast-leave processing feature is disabled by default.

1. Enable fast-leave processing.

```
SEFOS# configure terminal  
SEFOS(config)# vlan 4  
SEFOS(config-vlan)# ipv6 mld snooping fast-leave  
SEFOS(config-vlan)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping  
  
Snooping VLAN Configuration for the VLAN 4  
MLD Snooping enabled  
MLD Operating version is V2
```

```
Fast leave is enabled
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
```

▼ Disable Fast-Leave Processing

If you have enabled fast-leave processing, you can restore the default value (disabled).

- **Type.**

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
SEFOS(config)# no ipv6 mld snooping fast-leave
```

Configuring Report Forwarding

By default, when an MLD report is received, it is forwarded to all router ports. However, it is also possible to configure the received reports to be forwarded on the member ports of the VLAN. In addition, you can suppress the sending of reports to router ports for a specified period of time. During the amount of time you specify, MLD report messages for the same group will not get forwarded onto the router ports.

- [“Forward MLD Reports to All Ports” on page 21](#)
- [“Forward MLD Reports Only to Router Ports” on page 22](#)
- [“Restore the Default MLD Report-Forwarding Status” on page 23](#)
- [“Configure the Report Forward Suppression Interval” on page 23](#)
- [“Restore the Default Report Forward Suppression Interval” on page 24](#)

▼ Forward MLD Reports to All Ports

The default setting for this feature forwards MLD reports to router ports on a VLAN.

1. Configure report forwarding.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping report-forward all-ports
SEFOS(config)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 130 seconds
Report forward interval is 8 seconds
Group specific query interval is 3 seconds
Reports are forwarded on all ports
Group specific query retry count is 4
```

▼ Forward MLD Reports Only to Router Ports

If you have previously configured MLD reports to forward to all ports, you can restore the default setting to forward MLD reports to only router ports on a VLAN.

1. Reconfigure the forwarding of reports to only router ports.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping report-forward router-ports
SEFOS(config)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
```

```
Router port purge interval is 125 seconds
Port purge interval is 130 seconds
Report forward interval is 8 seconds
Group specific query interval is 3 seconds
Reports are forwarded on router ports
Group specific query retry count is 4
```

▼ Restore the Default MLD Report-Forwarding Status

- Type.

```
SEFOS# no ipv6 mld snooping report-forward
```

▼ Configure the Report Forward Suppression Interval

The default report forward interval is 5 seconds. This example sets the report-forward interval to 8 seconds. MLD report messages for the same group will not get forwarded onto the router ports for 8 seconds.

1. Configure the report-suppression interval.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping report-suppression-interval 8
SEFOS(config)# end
```

Only one report will be forwarded within the report forward interval of 8 seconds for a particular group.

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 130 seconds
```

```
Report forward interval is 8 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
```

▼ Restore the Default Report Forward Suppression Interval

- Type.

```
SEFOS# no ipv6 mld snooping report-suppression-interval
```

Configuring Group Query Interval

When a switch receives a leave message on a port, it sends the group-specific query message on that particular port. You can configure the time interval after which the switch sends a group-specific query on a port. You can also configure the maximum number of group-specific queries sent on a port after an MLD leave message is received.

- [“Configure the Group Query Interval” on page 24](#)
- [“Restore the Default Query Interval” on page 25](#)
- [“Configure Group Query Retry Count” on page 25](#)
- [“Restore the Default Query Interval” on page 26](#)

▼ Configure the Group Query Interval

The group query interval default value is 2 seconds. This example changes the interval to 3 seconds.

1. **Configure the group query interval.**

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping group-query-interval 3
SEFOS(config)# end
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 130 seconds
Report forward interval is 8 seconds
Group specific query interval is 3 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
```

▼ Restore the Default Query Interval

- Type.

```
SEFOS# no ipv6 mld snooping group-query-interval
```

▼ Configure Group Query Retry Count

The default value of group retry count is 2. This example changes the value to 4 seconds.

1. Configure the group retry count.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping retry-count 4
```

2. View the configuration.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
```

```
Port purge interval is 130 seconds
Report forward interval is 8 seconds
Group specific query interval is 3 seconds
Reports are forwarded on router ports
Group specific query retry count is 4
```

▼ Restore the Default Query Interval

- **Type.**

```
SEFOS(config)# no ipv6 mld snooping retry-count
```

Configuring Snooping Statistics

Snooping statistics are updated for each VLAN when various multicast packets are transmitted and received. These statistics can be cleared for a specific VLAN or for all VLANs.

- [“Enable Snooping Statistics for a Specific VLAN” on page 26](#)
- [“Clear Snooping Statistics for a Specific VLAN” on page 27](#)
- [“Clear Snooping Statistics for All VLANs” on page 28](#)

▼ Enable Snooping Statistics for a Specific VLAN

This example enables statistic reporting for VLAN 1.

1. **Enable statistic reporting for a specific VLAN.**

```
SEFOS# configure terminal
SEFOS(config)# vlan 1
SEFOS(config-vlan)# ipv6 mld snooping
SEFOS(config-vlan)# end
```

2. **Verify that snooping statistics (ASM reports) are being received.**

```
SEFOS# show ipv6 mld snooping statistics vlan 1
```

```
Snooping Statistics for VLAN 1
```



```
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
ASM reports received: 7
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
Group specific queries transmitted: 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Packets dropped: 0
```

▼ Clear Snooping Statistics for a Specific VLAN

This example clears statistics for VLAN 1.

1. Clear statistics for a specific VLAN.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping clear counters vlan 1
```

2. Verify that snooping statistics have been cleared for VLAN 1.

```
SEFOS# show ipv6 mld snooping statistics vlan 1

Snooping Statistics for VLAN 1
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
ASM reports received: 0
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
```

```
Group specific queries transmitted: 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Packets dropped: 0
```

▼ Clear Snooping Statistics for All VLANs

1. Clear the statistics for all VLANs.

```
SEFOS# configure terminal
SEFOS(config)# ipv6 mld snooping clear counters
SEFOS(config)# end
```

2. Ensure that snooping statistics have been cleared for all VLANs.

```
SEFOS# show ipv6 mld snooping statistics

Snooping Statistics for VLAN 1
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
ASM reports received: 0
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
Group specific queries transmitted: 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Packets dropped: 0
```

Configuring Query Transmission on Topology Change

The snooping switch is configured to send MLD general queries on all the nonrouter ports, when spanning tree topology changes occur in a network. If the spanning tree mode is RSTP, MLD general queries are sent on all the non router ports, which are the VLANs member ports present in the switch. If the spanning tree mode is MSTP, MLD general queries are sent on all the nonrouter ports of the VLAN mapped for the MSTP instance. Once you enable this command, the switch generates MLD general query messages when a topology change occurs in the network.

- [“Enable Query Transmission on Topology Change” on page 29](#)
- [“Disable Query Transmission on Topology Change” on page 30](#)

▼ Enable Query Transmission on Topology Change

The function that transmits MLD queries only when the topology changes is disabled by default.

1. **Specify that MLD general queries should be transmitted when any change occurs in the network topology.**

```
SEFOS(config)# configure terminal
SEFOS(config)# ipv6 mld snooping send-query enable
SEFOS(config)# end
```

2. **Ensure that general queries will be transmitted when a change occurs in the network topology.**

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Transmit Query on Topology Change globally enabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
```

```
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
```

▼ Disable Query Transmission on Topology Change

If you have enabled the transmission of MLD queries when topology changes occur in the network, you can disable the feature.

1. Restore the default value of the query transmission on topology change feature.

```
SEFOS(config)# ipv6 mld snooping send-query disable
```

2. Ensure that queries will not be transmitted when a topology change occurs.

```
SEFOS# show ipv6 mld snooping globals

Snooping Configuration
-----
MLD Snooping globally enabled
MLD Snooping is operationally enabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy reporting globally enabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
```

▼ Display MLD Statistics

To display MLD statistics, follow the steps described in the following task.

- View the statistics of the various packets that have been received or transmitted.

```
SEFOS# show ipv6 mld snooping statistics

Snooping Statistics for VLAN 1
  General queries received: 0
  Group specific queries received: 0
  Group and source specific queries received: 0
  ASM reports received: 3
  SSM reports received: 0
  IS_INCLUDE messages received: 0
  IS_EXCLUDE messages received: 0
  TO_INCLUDE messages received: 0
  TO_EXCLUDE messages received: 0
  ALLOW messages received: 0
  Block messages received: 0
  Done messages received: 0
  General queries transmitted: 0
  Group specific queries transmitted: 0
  ASM reports transmitted: 0
  SSM reports transmitted: 0
  Done messages transmitted: 0
  Packets dropped: 0
```

