ZebOS-XP®
Network Platform

Version 1.4
Extended Performance

Multicast Routing Information Base
Command Reference

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IP Infusion Inc.
3965 Freedom Circle, Suite 200
Santa Clara, CA 95054
+1 408-400-1900
http://www.ipinfusion.com/

For support, questions, or comments via E-mail, contact:
support@ipinfusion.com

Contents

Preface

This document describes the ZebOS-XP commands for Multicast Routing Information Base (MRIB).

Audience

This document is intended for network administrators and other engineering professionals who configure and manage MRIB.

Conventions

Table P-1 shows the conventions used in this guide.

Table P-1: Conventions

Convention	Description
Italics	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
`monospaced type`	Code elements such as commands, functions, parameters, files, and directories

Contents

This document contains these chapters and appendices:

- Chapter 1, *Command Line Interface*
- Chapter 2, *Multicast Commands*
- Chapter 3, *L3 IGMP Multicast Commands*
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Related Documents

The following guides are related to this document:

- *Multicast Developer Guide*
- *Multicast Configuration Guide*
- *Installation Guide*

Note: All ZebOS-XP technical manuals are available to licensed customers at http://www.ipinfusion.com/support/document_list.

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CHAPTER 1 Command Line Interface

This chapter introduces the ZebOS-XP Command Line Interface (CLI) and how to use its features.

Overview

You use the CLI to configure, monitor, and maintain ZebOS-XP devices. The CLI is text-based and each command is usually associated with a specific task.

You can give the commands described in this manual locally from the console of a device running ZebOS-XP or remotely from a terminal emulator such as `putty` or `xterm`. You can also use the commands in scripts to automate configuration tasks.

Starting the Command Line Interface

You must start daemons as described in this section before you can use the CLI. The general steps are listed below. For details about the ZebOS-XP daemons, see the *Installation Guide.*

1. Start your terminal emulator and connect to the device or go to the console of the device running ZebOS-XP.
2. Connect to the directory where you installed the ZebOS-XP executables.
3. Start the Network Services Module (NSM).
   ```
   # ./nsm -d
   ```
4. Start the protocol module daemons that your organization uses, such as `mstpd`, `ospf6d`, or `ripd`.
   ```
   # ./mstpd -d
   ```
5. Start the Integrated Management Interface (IMI) daemon.
   ```
   # ./imi -d
   ```
6. Start the IMI shell.
   ```
   # ./imish
   ```
   Note: Your organization may use a ZebOS-XP build that does not include `imish`. If that is the case, you must connect to a port on which a protocol daemon is listening. For details, see the *Installation Guide.*

You can now begin using the CLI.

Command Line Interface Help

You access the CLI help by entering a full or partial command string and a question mark “?”. The CLI displays the command keywords or parameters along with a short description. For example, at the CLI command prompt, type:

```
> show ?
```

The CLI displays this keyword list with short descriptions for each keyword:

```
show ?
  application-priority            Application Priority
```

```
  arp                              Internet Protocol (IP)
  bfd                              Bidirectional Forwarding Detection (BFD)
  bgp                              Border Gateway Protocol (BGP)
  bi-lsp                           Bi-directional lsp status and configuration
  bridge                           Bridge group commands
  ce-vlan                          COS Preservation for Customer Edge VLAN
  class-map                        Class map entry
  cli                              Show CLI tree of current mode
  clns                             Connectionless-Mode Network Service (CLNS)
  control-adjacency                Control Adjacency status and configuration
  control-channel                  Control Channel status and configuration
  cspf                             CSPF Information
  customer                         Display Customer spanning-tree
  cvlan                            Display CVLAN information
  debugging                        Debugging functions (see also 'undebug')
  dot1x                            IEEE 802.1X Port-Based Access Control
  etherchannel                     LACP etherchannel
  ethernet                         Layer-2
...
```

If you type the ? in the middle of a keyword, the CLI displays help for that keyword only.

```
> show de?
debugging  Debugging functions (see also 'undebug')
```

If you type the ? in the middle of a keyword, but the incomplete keyword matches several other keywords, ZebOS-XP displays help for all matching keywords.

```
> show i? (CLI does not display the question mark).
interface  Interface status and configuration
ip         IP information
isis       ISIS information
```

Command Completion

The CLI can complete the spelling of a command or a parameter. Begin typing the command or parameter and then press the tab key. For example, at the CLI command prompt type `sh`:

```
> sh
```

Press the tab key. The CLI displays:

```
> show
```

If the spelling of a command or parameter is ambiguous, the CLI displays the choices that match the abbreviation. Type `show i` and press the tab key. The CLI displays:

```
> show i
  interface  ip         ipv6       isis
> show i
```

The CLI displays the `interface` and `ip` keywords. Type `n` to select `interface` and press the tab key. The CLI displays:

```
> show in
> show interface
```

Type ? and the CLI displays the list of parameters for the `show interface` command.

```
> show interface
  IFNAME  Interface name
  |       Output modifiers
```



```
>       Output redirection
<cr>
```

The CLI displays the only parameter associated with this command, the `IFNAME` parameter.

Command Abbreviations

The CLI accepts abbreviations that uniquely identify a keyword in commands. For example:

```
> sh in eth0
```

is an abbreviation for:

```
> show interface eth0
```

Command Line Errors

Any unknown spelling causes the CLI to display the error `Unrecognized command` in response to the ?. The CLI displays the command again as last entered.

```
> show dd?
% Unrecognized command
> show dd
```

When you press the Enter key after typing an invalid command, the CLI displays:

```
(config)#router ospf here
                          ^
% Invalid input detected at '^' marker.
```

where the ^ points to the first character in error in the command.

If a command is incomplete, the CLI displays the following message:

```
> show
% Incomplete command.
```

Some commands are too long for the display line and can wrap mid-parameter or mid-keyword, as shown below. This does *not* cause an error and the command performs as expected:

```
area 10.10.0.18 virtual-link 10.10.0.19 authent
ication-key 57393
```

Command Negation

Many commands have a `no` form that resets a feature to its default value or disables the feature. For example:

- The `ip address` command assigns an IPv4 address to an interface
- The `no ip address` command removes an IPv4 address from an interface

Syntax Conventions

Table 1-1 describes the conventions used to represent command syntax in this reference.

Table 1-1: Syntax conventions

Convention	Description	Example
`monospaced font`	Command strings entered on a command line	`show debugging ip mrib`
`lowercase`	Keywords that you enter exactly as shown in the command syntax.	`show debugging ip mrib`
`UPPERCASE`	See Variable Placeholders	`IFNAME`
`()`	Optional parameters, from which you must select one. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>)`
`()`	Optional parameters, from which you select one or none. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	`(A.B.C.D|<0-4294967295>|)`
`()`	Optional parameter which you can specify or omit. Do not enter the parentheses or vertical bar as part of the command.	`(IFNAME|)`
`{}`	Optional parameters, from which you must select one or more. Vertical bars delimit the selections. Do not enter the braces or vertical bars as part of the command.	`{intra-area <1-255>|inter-area <1-255>|external <1-255>}`
`[]`	Optional parameters, from which you select zero or more. Vertical bars delimit the selections. Do not enter the brackets or vertical bars as part of the command. A '?' before a parameter in square brackets limits that parameter to one occurrence in a command string.	`[<1-65535>|AA:NN|internet|local-AS|no-advertise|no-export]`
`.`	Repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	`set as-path prepend .<1-65535>`

Variable Placeholders

Table 1-2 shows the tokens used in command syntax use to represent variables for which you supply a value.

Table 1-2: Variable placeholders

Token	Description
`WORD`	A contiguous text string (excluding spaces)
`LINE`	A text string, including spaces; no other parameters can follow this parameter
`IFNAME`	Interface name whose format varies depending on the platform; examples are: `eth0`, `Ethernet0`, `ethernet0`, `xe0`
`A.B.C.D`	IPv4 address
`A.B.C.D/M`	IPv4 address and mask/prefix
`X:X::X:X`	IPv6 address
`X:X::X:X/M`	IPv6 address and mask/prefix
`HH:MM:SS`	Time format
`AA:NN`	BGP community value
`XX:XX:XX:XX:XX:XX`	MAC address

`<1-5>`
`<1-65535>`
`<0-2147483647>`
`<0-4294967295>`
	Numeric range

Command Description Format

Table 1-3 explains the sections used to describe each command in this reference.

Table 1-3: Command descriptions

Section	Description
Command Name	The name of the command, followed by what the command does and when should it be used
Command Syntax	The syntax of the command
Parameters	Parameters and options for the command
Default	The state before the command is executed
Command Mode	The mode in which the command runs; see Command Modes
Example	An example of the command being executed

Keyboard Operations

Table 1-4 lists the operations you can perform from the keyboard.

Table 1-4: Keyboard operations

Key combination	Operation
Left arrow or Ctrl+b	Moves one character to the left. When a command extends beyond a single line, you can press left arrow or Ctrl+b repeatedly to scroll toward the beginning of the line, or you can press Ctrl+a to go directly to the beginning of the line.
Right arrow or Ctrl-f	Moves one character to the right. When a command extends beyond a single line, you can press right arrow or Ctrl+f repeatedly to scroll toward the end of the line, or you can press Ctrl+e to go directly to the end of the line.
Esc, b	Moves back one word
Esc, f	Moves forward one word
Ctrl+e	Moves to end of the line
Ctrl+a	Moves to the beginning of the line
Ctrl+u	Deletes the line
Ctrl+w	Deletes from the cursor to the previous whitespace
Alt+d	Deletes the current word
Ctrl+k	Deletes from the cursor to the end of line
Ctrl+y	Pastes text previously deleted with Ctrl+k, Alt+d, Ctrl+w, or Ctrl+u at the cursor

Table 1-4: Keyboard operations (Continued)

Key combination	Operation
Ctrl+t	Transposes the current character with the previous character
Ctrl+c	Ignores the current line and redisplays the command prompt
Ctrl+z	Ends configuration mode and returns to exec mode
Ctrl+l	Clears the screen
Up Arrow or Ctrl+p	Scroll backward through command history
Down Arrow or Ctrl+n	Scroll forward through command history

Show Command Modifiers

You can use two tokens to modify the output of a `show` command. Enter a question mark to display these tokens:

```
# show users ?
  | Output modifiers
  > Output redirection
```

You can type the | (vertical bar character) to use output modifiers. For example:

```
> show rsvp | ?
  begin     Begin with the line that matches
  exclude   Exclude lines that match
  include   Include lines that match
  redirect  Redirect output
```

Begin Modifier

The `begin` modifier displays the output beginning with the first line that contains the input string (everything typed after the `begin` keyword). For example:

```
# show run | begin eth1
...skipping
interface eth1
 ipv6 address fe80::204:75ff:fee6:5393/64
!
interface eth2
 ipv6 address fe80::20d:56ff:fe96:725a/64
!
line con 0
 login
!
end
```

You can specify a regular expression after the `begin` keyword, This example begins the output at a line with either “eth3” or “eth4”:

```
# show run | begin eth[3-4]

...skipping
interface eth3
```

```
 shutdown
!
interface eth4
 shutdown
!
interface svlan0.1
 no shutdown
!
route-map myroute permit 3
!
route-map mymap1 permit 10
!
route-map rmap1 permit 3
!
line con 0
 login
line vty 0 4
 login
!
end
```

Include Modifier

The `include` modifier includes only those lines of output that contain the input string. In the output below, all lines containing the word “input” are included:

```
# show interface eth1 | include input
    input packets 80434552, bytes 2147483647, dropped 0, multicast packets 0
    input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 1, missed 0
```

You can specify a regular expression after the `include` keyword. This examples includes all lines with “input” or “output”:

```
#show int eth0 | include (in|out)put
    input packets 597058, bytes 338081476, dropped 0, multicast packets 0
    input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 0, missed 0
    output packets 613147, bytes 126055987, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
```

Exclude Modifier

The `exclude` modifier excludes all lines of output that contain the input string. In the following output example, all lines containing the word “input” are excluded:

```
# show interface eth1 | exclude input
Interface eth1
  Scope: both
  Hardware is Ethernet, address is 0004.75e6.5393
  index 3 metric 1 mtu 1500 <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Administrative Group(s): None
  DSTE Bandwidth Constraint Mode is MAM
  inet6 fe80::204:75ff:fee6:5393/64
    output packets 4438, bytes 394940, dropped 0
    output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
    collisions 0
```

You can specify a regular expression after the `exclude` keyword. This example excludes lines with “output” or “input”:


```
# show interface eth0 | exclude (in|out)put
Interface eth0
  Scope: both
  Hardware is Ethernet  Current HW addr: 001b.2139.6c4a
  Physical:001b.2139.6c4a  Logical:(not set)
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 3000
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Bandwidth 100m
  DHCP client is disabled.
  inet 10.1.2.173/24 broadcast 10.1.2.255
  VRRP Master of :  VRRP is not configured on this interface.
  inet6 fe80::21b:21ff:fe39:6c4a/64
    collisions 0
```

Redirect Modifier

The `redirect` modifier writes the output into a file. The output is not displayed.

```
# show history | redirect /var/frame.txt
```

The output redirection token (>) does the same thing:

```
# show history >/var/frame.txt
```

Command Modes

Commands are grouped into modes arranged in a hierarchy. Each mode has its own set of commands. Table 1-5 lists the command modes common to all protocols.

Table 1-5: Common command modes

Name	Description
Executive mode	Also called *view* mode, this is the first mode to appear after you start the CLI. It is a base mode from where you can perform basic commands such as `show`, `exit`, `quit`, `help`, `list`, and `enable`.
Privileged executive mode	Also called *enable* mode, in this mode you can run additional basic commands such as `debug`, `write`, and `show`.
Configure mode	Also called *configure terminal* mode, in this mode you can run configuration commands and go into other modes such as interface, router, route map, key chain, and address family.
Interface mode	In this mode you can configure protocol-specific settings for a particular interface. Any setting you configure in this mode overrides a setting configured in router mode.
Router mode	This mode is used to configure router-specific settings for a protocol such as RIP or OSPF.

Command Mode Tree

The diagram below shows the common command mode hierarchy.

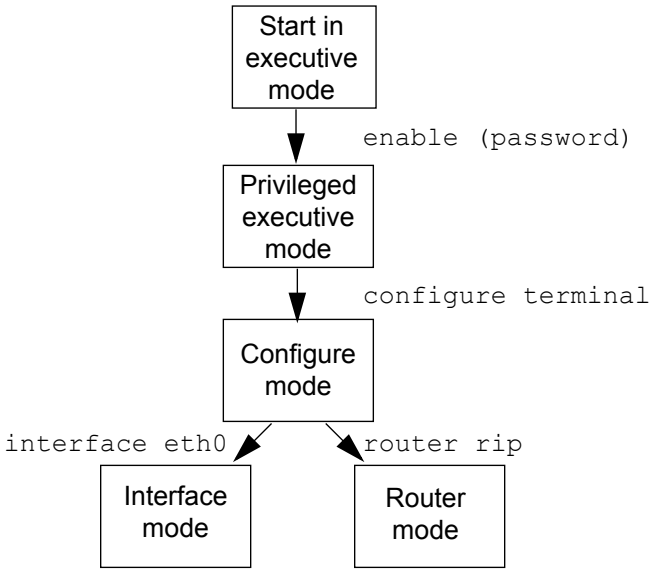

Figure 1-1: Common command modes

To change modes:

1. Enter privileged executive mode by entering `enable` in Executive mode.
2. Enter configure mode by entering `configure terminal` in Privileged Executive mode.

The example below shows starting `imish` and then moving from executive mode to privileged executive mode to configure mode and finally to router mode:

```
# ./imish
> enable mypassword
# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
(config)# router rip
(config-router)#
```

Note: Each protocol can have modes in addition to the common command modes. See the command reference for the respective protocol for details.

Debug Command

Whether the settings you make for a `debug` command persist between sessions depends on the mode where you make the settings:

- When you make settings for a `debug` command in executive mode, the configuration is valid for the current session only and is not saved in the `ZebOS.conf` file.
- When you make settings for a `debug` command in configuration mode, the configuration is retained and saved in `ZebOS.conf` and used even after the session restarts.

CHAPTER 2 Multicast Commands

ZebOS-XP multicast protocol modules work with the Multicast Routing Information Base (MRIB).

clear ip mroute

Use this command to delete entries from the IP multicast routing table. This command clears the multicast route entries in the multicast route table and removes the entries from the multicast forwarder. MRIB sends a clear message to the multicast protocols. Each multicast protocol has its own clear multicast route command. The protocol-specific clear command clears multicast routes from the protocol and clears the routes from the MRIB.

Command Syntax

```
clear ip mroute *
clear ip mroute A.B.C.D
clear ip mroute A.B.C.D A.B.C.D
clear ip mroute statistics *
clear ip mroute statistics A.B.C.D
clear ip mroute statistics A.B.C.D A.B.C.D
clear ip mroute (vrf NAME|) *
clear ip mroute (vrf NAME|) A.B.C.D
clear ip mroute (vrf NAME|) A.B.C.D A.B.C.D
clear ip mroute (vrf NAME|) statistics *
clear ip mroute (vrf NAME|) statistics A.B.C.D
clear ip mroute (vrf NAME|) statistics A.B.C.D A.B.C.D
```

Parameters

`*`	All multicast routes.
`A.B.C.D`	Group IP address.
`A.B.C.D`	Source IP address.
`vrf`	VRF name.

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ip mroute vrf VRF_A 225.1.1.1 3.3.3.3
```

clear ipv6 mroute

Use this command to delete entries from the IPv6 multicast routing table. This command clears the multicast route entries in the multicast route table and removes the entries from the multicast forwarder. The MRIB sends a clear message to the multicast protocols. Each multicast protocol has its own clear multicast route command.

Command Syntax

```
clear ipv6 mroute *
clear ipv6 mroute statistics *
clear ipv6 mroute statistics X:X::X:X
clear ipv6 mroute statistics X:X::X:X X:X::X:X
clear ipv6 mroute X:X::X:X
clear ipv6 mroute X:X::X:X X:X::X:X
clear ipv6 mroute (vrf NAME|) *
clear ipv6 mroute (vrf NAME|) statistics *
clear ipv6 mroute (vrf NAME|) statistics X:X::X:X
clear ipv6 mroute (vrf NAME|) statistics X:X::X:X X:X::X:X
clear ipv6 mroute (vrf NAME|) X:X::X:X
clear ipv6 mroute (vrf NAME|) X:X::X:X X:X::X:X
```

Parameters

`*`	All multicast routes.
`X:X::X:X`	Group IP address.
`X:X::X:X`	Source IP address.
`vrf`	VRF name.

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ipv6 mroute ff1e::10 3ffe::1
```

debug ip mrib

Use this command to set debug options for IPv4 multicast.

Use the `no` parameter with this command to disable debugging IPv4 multicast.

Command Syntax

```
debug ip mrib (all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
debug ip mrib (vrf NAME|)(all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
no debug ip mrib (all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
no debug ip mrib (vrf NAME|) ((all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
```

Parameters

`all`	Enable all IPv4 multicast debugging.
`event`	Enable debugging of multicast events.
`fib-msg`	Enable debugging of multicast FIB messages
`mrib-msg`	Enable debugging of multicast MRIB messages
`mrt`	Enable debugging of multicast route
`mtrace`	Enable debugging of multicast traceroute
`mtrace-detail`	Enable detailed debugging of multicast traceroute messages
`nsm-msg`	Enable debugging of multicast NSM messages
`register-msg`	Enable debugging of multicast PIM Register messages
`stats`	Enable debugging of multicast statistics.
`vif`	Enable debugging of multicast interface
`vrf`	Specify the VRF name

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
#debug ip mrib all
```

debug ipv6 mrib

Use this command to set debug options for IPv6 multicast.

Use the `no` parameter with this command to disable debugging IPv6 multicast.

Command Syntax

```
debug ipv6 mrib (all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
debug ipv6 mrib (vrf NAME|)(all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
no debug ipv6 mrib (all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
no debug ipv6 mrib (vrf NAME|) ((all|event|vif|mrt|stats|fib-msg|register-msg|nsm-msg|mrib-msg|mtrace|mtrace-detail)
```

Parameters

`all`	Enable all IPv6 multicast debugging.
`event`	Enable debugging of multicast events.
`fib-msg`	Enable debugging of multicast FIB messages
`mrib-msg`	Enable debugging of multicast MRIB messages
`mrt`	Enable debugging of multicast route
`mtrace`	Enable debugging of multicast traceroute
`mtrace-detail`	Enable detailed debugging of multicast traceroute messages
`nsm-msg`	Enable debugging of multicast NSM messages
`register-msg`	Enable debugging of multicast PIM Register messages
`stats`	Enable debugging of multicast statistics.
`vif`	Enable debugging of multicast interface
`vrf`	Specify the VRF name

Command Mode

Exec mode, Privileged Exec mode, and Configure mode

Example

```
#debug ipv6 mrib event
```

ip multicast route-limit

Use this command to limit the number of multicast routes that can be added to a multicast routing table. It generates an error message when the limit is exceeded. If the threshold parameter is set, a threshold warning message is generated when this threshold is exceeded and the message continues to occur until the number of mroutes reaches the limit set by the limit argument.

Note: The mroute warning threshold must not exceed the mroute limit.

Use the `no` parameter with this command to disable this configuration.

Command Syntax

```
ip multicast route-limit <1-2147483647>
ip multicast route-limit <1-2147483647> <1-2147483647>
ip multicast (vrf NAME|) route-limit <1-2147483647>
ip multicast (vrf NAME|) route-limit <1-2147483647> <1-2147483647>
no ip multicast route-limit
no ip multicast (vrf NAME|) route-limit
```

Parameters

`vrf`	VRF name
`<1-2147483647>`	Number of routes
`<1-2147483647>`	Threshold at which to generate a warning message

Default

The default limit and threshold value is 2147483647.

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip multicast route-limit 34 24
```

ip multicast ttl-threshold

Use this command to configure the time-to-live (TTL) threshold of packets being forwarded out of an interface. Only multicast packets with a TTL value greater than the threshold are forwarded out of the interface.

Use the no parameter with this command to return to the default TTL threshold.

Command Syntax

```
ip multicast ttl-threshold <1-255>
no ip multicast ttl-threshold
```

Parameters

<1-255>	The time-to-live threshold.

Default

The default TTL value is 1.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth0
(config-if)#ip multicast ttl-threshold 34
```

ip multicast-routing

Use this command to turn on/off multicast routing on the router; when turned off, the multicast protocol daemon remains present, but does not perform multicast functions. When multicast routing is enabled, the MRIB re-creates tunnels, and starts processing any VIF addition/deletion requests, MRT addition/deletion requests, and any multicast forwarding events.

Use the `no` parameter with this command to disable this function. When the `no` parameter is used, the MRIB releases all VIFs and tunnels, cleans up MRTs, stops IGMPv2 operation and stops relaying multicast forwarder events to multicast protocols.

Command Syntax

```
ip multicast-routing
ip multicast-routing (vrf NAME|)
no ip multicast-routing
no ip multicast-routing (vrf NAME|)
```

Parameter

`vrf`	Specify the VRF name.

Default

By default, multicast routing is on.

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip multicast-routing
```

ipv6 multicast route-limit

Use this command to limit the number of IPv6 multicast routes that can be added to a multicast routing table. It generates an error message when the limit is exceeded. If the threshold parameter is set, a threshold warning message is generated when this threshold is exceeded, and the message continues to occur until the number of mroutes reaches the limit set by the limit argument.

Note: The mroute warning threshold must not exceed the mroute limit.

Use the `no` parameter with this command to disable this configuration.

Command Syntax

```
ipv6 multicast route-limit <1-2147483647>
ipv6 multicast route-limit <1-2147483647> <1-2147483647>
ipv6 multicast (vrf NAME|) route-limit <1-2147483647>
ipv6 multicast (vrf NAME|) route-limit <1-2147483647> <1-2147483647>
no ipv6 multicast route-limit
no ipv6 (vrf NAME|) multicast route-limit
```

Parameters

`vrf`	Specify the VRF name
`<1-2147483647>`	Number of routes
`<1-2147483647>`	Threshold at which to generate a warning message

Default

The default limit and threshold value is 2147483647.

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 multicast route-limit 34 34
```

ipv6 multicast-routing

Use this command to turn on/off IPv6 multicast routing on the router; when turned off, the multicast protocol daemon remains present, but does not perform multicast functions. When multicast routing is enabled, the MRIB re-creates tunnels, and starts processing any VIF addition/deletion requests, MRT addition/deletion requests, and any multicast forwarding events.

Use the `no` parameter with this command to disable this function. When the `no` parameter is used, the MRIB releases all VIFs and tunnels, cleans up MRTs, stops IGMPv2 operation and stops relaying multicast forwarder events to multicast protocols.

Command Syntax

```
ipv6 multicast-routing
ipv6 multicast-routing (vrf NAME|)
no ipv6 multicast-routing
no ipv6 multicast-routing (vrf NAME|)
```

Parameter

`vrf`	Specify the VRF name.

Default

By default, multicast routing is enabled.

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 multicast-routing
```

show debugging ip mrib

Use this command to display IPv4 multicast debugging information.

Command Syntax

```
show debugging ip mrib
show debugging ip mrib (vrf NAME|)
```

Parameters

`vrf`	Display routes from a VPN Routing/Forwarding instance.

Command Mode

Exec mode and Privileged Exec mode

Examples

The following is a sample output of the `show debugging ip mrib` command.

```
#show debugging ip mrib
Debugging status:
  MRIBv4 event debugging is on
  MRIBv4 VIF debugging is on
  MRIBv4 route debugging is on
  MRIBv4 route statistics debugging is on
  MRIBv4 FIB message debugging is on
  MRIBv4 PIM Register message debugging is on
  MRIBv4 NSM IPC message debugging is on
  MRIBv4 MRIB IPC message debugging is on
  MRIBv4 traceroute debugging is on
  MRIBv4 traceroute detailed debugging is on
#
```

show debugging ipv6 mrib

Use this command to display IPv6 multicast debugging information.

Command Syntax

```
show debugging ipv6 mrib
show debugging ipv6 mrib (vrf NAME|)
```

Parameters

`vrf`	Display routes from a VPN Routing/Forwarding instance.

Command Mode

Exec mode and Privileged Exec mode

Examples

The following is a sample output of the `show debugging ipv6 mrib` command.

```
#show debugging ipv6 mrib
Debugging status:
  MRIBv6 event debugging is on
  MRIBv6 FIB message debugging is on
  MRIBv6 PIM Register message debugging is on
  MRIBv6 NSM IPC message debugging is on
  MRIBv6 MRIB IPC message debugging is on
#
```

show ip mroute

Use this command to display the IP multicast routing (mroute) table.

Command Syntax

```
show ip mroute (dense|sparse|) (count|summary|)
show ip mroute A.B.C.D (dense|sparse|)(count|summary|)
show ip mroute A.B.C.D A.B.C.D (dense|sparse|) (count|summary|)
show ip mroute (vrf NAME|) (dense|sparse|) (count|summary|)
show ip mroute (vrf NAME|) A.B.C.D (dense|sparse|) (count|summary|)
show ip mroute (vrf NAME|) A.B.C.D A.B.C.D (dense|sparse|) (count|summary|)
```

Parameters

A.B.C.D	Source or Group IP address.
count	Route and packet count data.
summary	Provide abbreviated display.
dense	Show dense multicast routes.
sparse	Show sparse multicast routes.
vrf	Specify the VRF name.

Command Mode

Exec and Privileged Exec mode

Example

The following is a sample output of this command displaying the IP multicast routing table, with and without specifying the group and source IP address:

```
rtr6#show ip mroute

IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
       B - BIDIR
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)

(172.31.1.52, 224.0.1.3), uptime 00:09:39
Owner PIM, Flags: F
  Incoming interface: eth1
  Outgoing interface list:
    eth2 (1)
```

The following is a sample output of this command displaying the packet count from the IP multicast routing table:

```
#show ip mroute count
IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
```

```
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10

Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent

(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
  Fwd msg: 0/0, Client msg: 0/0/0/0,  Reg: 0/0/0
```

The following is a sample output for this command displaying the IP multicast routing table in an abbreviated form:

```
#show ip mroute summary

IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)

(10.10.1.52, 224.0.1.3), 00:01:32/00:03:20, PIM-SM, Flags: TF
```

show ip mvif

Use this command to display the MRIB VIF table.

Command Syntax

```
show ip mvif
show ip mvif IFNAME
show ip mvif (vrf NAME|)
show ip mvif (vrf NAME|) IFNAME
```

Parameters

IFNAME	Specify the interface name.
vrf	Specify the VRF name.

Command Mode

Exec and Privileged Exec mode

Example

The following are sample outputs of this command displaying the contents for the MRIB VIF table, both with and without the interface parameter specified:

```
#show ip mvif
Interface    Vif   Owner    TTL  Local            Remote           Uptime
             Idx   Module        Address          Address
wm0          0     PIM-SM   1    192.168.1.53     0.0.0.0          00:04:26
Register     1             1    192.168.1.53     0.0.0.0          00:04:26
wm1          2     PIM-SM   1    192.168.10.53    0.0.0.0          00:04:25
ZebO#show ip mvif wm0
Interface   Vif   Owner    TTL  Local            Remote           Uptime
            Idx   Module        Address          Address
wm0         0     PIM-SM   1    192.168.1.53     0.0.0.0          00:05:17
```

show ipv6 mif

Use this command to display the MRIB VIF table.

Command Syntax

```
show ipv6 mif
show ipv6 mif IFNAME
show ipv6 mif (vrf NAME|)
show ipv6 mif (vrf NAME|) IFNAME
```

Parameters

IFNAME	Interface name.
vrf	Specify the VRF name.

Command Mode

Exec and Privileged Exec mode

Example

The following are sample outputs of this command displaying the MRIB VIF table, with and without the interface parameter:

```
#show ipv6 mif
Interface      Mif   Owner         Uptime
               Idx   Module
wm0            0     PIM-SMv6    00:17:18
Register       1                 00:17:18
wm1            2     PIM-SMv6    00:17:18

#show ipv6 mif wm0
Interface      Mif   Owner       Uptime
               Idx   Module
wm0            0     PIM-SMv6    00:19:06
```

show ipv6 mroute

Use this command to display the IPv6 multicast routing (mroute) table.

Command Syntax

```
show ipv6 mroute (dense|sparse|) (count|summary|)
show ipv6 mroute X:X::X:X (dense|sparse|) (count|summary|)
show ipv6 mroute X:X::X:X X:X::X:X (dense|sparse|) (count|summary|)
show ipv6 mroute (vrf NAME|) (dense|sparse|) (count|summary|)
show ipv6 mroute (vrf NAME|) X:X::X:X (dense|sparse|) (count|summary|)
show ipv6 mroute (vrf NAME|) X:X::X:X X:X::X:X (dense|sparse|) (count|summary|)
```

Parameters

`X:X::X:X`	Source or Group IP address.
`dense`	Show dense multicast routes.
`sparse`	Show sparse multicast routes.
`count`	Route and packet count data.
`summary`	Provide abbreviated display.
`vrf`	Specify the VRF name.

Command Mode

Exec and Privileged Exec mode

Example

The following is a sample output for this command displaying the IPv6 multicast routing table:

```
#show ipv6 mroute

IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface

(3ffe:10:10:1::96, ff1e::10), uptime 00:00:09, stat expires 00:03:21
Owner PIM-SMv6, Flags: TF
  Incoming interface: wm0
  Outgoing interface list:
    wm1

(3ffe:10:10:1::96, ff1e::12), uptime 00:00:02, stat expires 00:03:28
Owner PIM-SMv6, Flags: TF
  Incoming interface: wm0
  Outgoing interface list:
    wm1
#
```

snmp restart mribd

Use this command to restart SNMP in Multicast Routing Information Base (MRIB)

Command Syntax

```
snmp restart mribd
```

Parameters

None

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#snmp restart mribd
```

CHAPTER 3 L3 IGMP Multicast Commands

This chapter describes the commands for Internet Group Management Protocol (IGMP) including the IGMP proxy service.

For IGMP multicast snooping commands, see Chapter 5, *L2 IGMP Snooping Multicast Commands*.

clear ip igmp

Use this command to clear all IGMP local-memberships on all interfaces. This command applies to interfaces configured for IGMP Layer-3 multicast protocols, or IGMP Proxy.

Command Syntax

```
clear ip igmp
clear ip igmp group *
clear ip igmp group A.B.C.D
clear ip igmp group A.B.C.D IFNAME
clear ip igmp interface IFNAME
clear ip igmp (vrf NAME|)
clear ip igmp (vrf NAME|) group *
clear ip igmp (vrf NAME|) group A.B.C.D
clear ip igmp (vrf NAME|) group A.B.C.D IFNAME
clear ip igmp (vrf NAME|) interface IFNAME
```

Parameters

`*`	Clears all groups on all interfaces.
`A.B.C.D`	Specify the group address's local-membership to be cleared from all interfaces.
`interface`	Specify an interface. All groups learned from this interface are deleted.
`IFNAME`	Specify name of the interface.
`vrf`	Specify the VRF name.
`group`	Deletes IGMP group cache entries.
`interface`	Specify name of the interface; all groups learned from this interface are deleted.

Command Mode

Privileged Exec mode

Examples

```
#clear ip igmp
#clear ip igmp group *
#clear ip igmp group 224.1.1.1
#clear ip igmp interface eth1
#clear ip igmp vrf VRF_A
#clear ip igmp vrf new group *
#clear ip igmp vrf new interface eth1
```

debug ip igmp

Use this command to enable debugging of all IGMP, or a specific component of IGMP. This command applies to interfaces configured for IGMP Layer-3 multicast protocols.

Use the `no` parameter with this command to disable all IGMP debugging, or select a specific IGMP component.

Command Syntax

```
debug ip igmp all
debug ip igmp decode
debug ip igmp encode
debug ip igmp events
debug ip igmp fsm
debug ip igmp tib
debug ip igmp (vrf NAME|) all
debug ip igmp (vrf NAME|) decode
debug ip igmp (vrf NAME|) encode
debug ip igmp (vrf NAME|) events
debug ip igmp (vrf NAME|) fsm
debug ip igmp (vrf NAME|) tib
no debug ip igmp all
no debug ip igmp decode
no debug ip igmp encode
no debug ip igmp events
no debug ip igmp fsm
no debug ip igmp tib
no debug ip igmp (vrf NAME|) all
no debug ip igmp (vrf NAME|) decode
no debug ip igmp (vrf NAME|) encode
no debug ip igmp (vrf NAME|) events
no debug ip igmp (vrf NAME|) fsm
no debug ip igmp (vrf NAME|) tib
```

Parameters

`all`	Debug all IGMP.
`decode`	Debug IGMP decoding.
`encode`	Debug IGMP encoding.
`events`	Debug IGMP events.
`fsm`	Debug IGMP Finite State Machine (FSM).
`tib`	Debug IGMP Tree Information Base (TIB).

`vrf`	Debug VPN Routing/Forwarding instance.

Command Mode

Privileged Exec mode and Configure mode

Example

```
#configure terminal
(config)#debug ip igmp all
```

ip igmp

Use this command to enable the IGMP operation on an interface. This command enables IGMP operation in stand-alone mode, and can be used to learn local-membership information prior to enabling a multicast routing protocol on the interface. This command will has no effect on interfaces configured for IGMP proxy.

Use the `no` parameter with this command to return all IGMP related configuration to the default (including IGMP proxy service).

Command Syntax

```
ip igmp
no ip igmp
```

Parameters

None

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ip igmp
```

ip igmp access-group

Use this command to control the multicast local-membership groups learned on an interface. This command applies to interfaces configured for IGMP Layer-3 multicast protocols, IGMP proxy.

Use the `no` parameter with this command to disable this access control.

Command Syntax

```
ip igmp access-group (<1-99>|WORD)
no ip igmp access-group
```

Parameters

`<1-99>`	Access-list number.
`WORD`	Standard IP access-list name.

Default

No access list configured

Command Mode

Interface mode

Examples

In the following example, hosts serviced by Ethernet interface 0 can only join the group 225.2.2.2:

```
#configure terminal
(config)#access-list 1 permit 225.2.2.2 0.0.0.0
(config)#interface 0
(config-if)#ip igmp access-group 1
```

ip igmp immediate-leave

In IGMP version 2, use this command to minimize the leave latency of IGMP memberships. This command is used when only one receiver host is connected to each interface. This command applies to interfaces configured for IGMP Layer-3 multicast protocols, IGMP Proxy.

To disable this feature, use the `no` parameter with this command.

Command Syntax

```
ip igmp immediate-leave group-list (<1-99>|<1300-1999>|WORD)
no ip igmp immediate-leave
```

Parameters

`group-list`	Standard access-list name or number that defines multicast groups in which the immediate leave feature is enabled.
`<1-99>`	Access-list number.
`<1300-1999>`	Access-list number (expanded range).
`WORD`	Standard IP access-list name.

Default

Disabled

Command Mode

Interface mode

Examples

The following example shows how to enable the immediate-leave feature on an interface for a specific range of multicast groups. In this example, the router assumes that the group access-list consists of groups that have only one host membership at a time per interface:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp immediate-leave group-list 34
(config-if)#exit
(config)#access-list 34 permit 225.192.20.0 0.0.0.255
```

ip igmp join-group

Use this command to configure a join multicast group.

Use the `no` parameter with this command to delete group membership entry.

Command Syntax

```
ip igmp join-group A.B.C.D {(source (A.B.C.D)|)}
no ip igmp join-group A.B.C.D {(source (A.B.C.D)|)}
```

Parameters

`A.B.C.D`	Standard IP multicast group address to be configured as a group member.
`source`	Static source to be joined.
`A.B.C.D`	Standard IP source address to be configured as a source from where multicast packets originate.

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp join-group 1.1.1.1 source 1.1.1.2

(config-if)#no ip igmp join-group 1.1.1.1 source 1.1.1.2
```

ip igmp last-member-query-count

Use this command to set the last-member query-count value. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

Use the `no` parameter with this command to return to the default value on an interface.

Command Syntax

```
ip igmp last-member-query-count <2-7>
no ip igmp last-member-query-count
```

Parameter

`<2-7>`	Specify the last member query count value.

Default

The default last member query count value is 2.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ip igmp last-member-query-count 3
```

ip igmp last-member-query-interval

Use this command to configure the frequency at which the router sends IGMP group-specific host query messages. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

Use the `no` parameter with this command to set this frequency to the default value.

Command Syntax

```
ip igmp last-member-query-interval <1000-25500>
no ip igmp last-member-query-interval
```

Parameter

`<1000-25500>`	Frequency (in milliseconds) at which IGMP group-specific host query messages are sent.

Default

1000 milliseconds

Command Mode

Interface mode

Example

The following example changes the IGMP group-specific host query message interval to 2 seconds:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp last-member-query-interval 2000
```

ip igmp limit

Use this command to set the maximum number of group membership states, at either the router level or at the interface level. Once the specified number of group memberships is reached, all further local-memberships are ignored. Optionally, an exception access-list can be configured to specify the group-address(es) to be excluded from being subject to the limit.

This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy. The limit applies, individually, to each of its constituent interfaces.

Use the `no` parameter with this command to unset the limit and any specified exception access-list.

Command Syntax

```
ip igmp limit (<1-2097152> (except (<1-99>|<1300-1999>|WORD) |)
ip igmp limit (vrf NAME)(<1-2097152> (except (<1-99>|<1300-1999>|WORD) |)
no ip igmp limit
no ip igmp (vrf NAME|) limit
```

Parameters

`vrf`	Specify the VRF name.
`<1-2097152>`	Maximum number of group membership states.
`except`	Number or name that defines multicast groups that are exempted from being subject to configured limit.
`<1-99>`	Access-list number.
`<1300-1999>`	Access-list number (expanded range).
`WORD`	Standard IP access-list name.

Command Mode

Configure mode and Interface mode

Examples

The following example configures an IGMP limit of 100 group-membership states across all interfaces on which IGMP is enabled, and excludes group 224.1.1.1 from this limitation:

```
#configure terminal
(config)#access-list 1 permit 224.1.1.1 0.0.0.0
(config)#ip igmp limit 100 except 1
```

The following example configures an IGMP limit of 100 group-membership states on eth0:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp limit 100
```

ip igmp mroute-proxy

Use this command to specify the IGMP Proxy service (upstream host-side) interface with which to be associated. IGMP router-side protocol operation is enabled only when the specified upstream proxy-service interface is functional.

Note: This command should not be used when configuring interfaces enabled for IGMP in association with a multicast routing protocol, otherwise the behavior will be undefined.

Use the `no` parameter with this command to remove the association with the proxy-service interface.

Command Syntax

```
ip igmp mroute-proxy IFNAME
no ip igmp mroute-proxy
```

Parameter

`IFNAME`	Specify an interface name.

Command Mode

Interface mode

Example

The following example configures the eth0 interface as the upstream proxy-service interface for the downstream router-side interface, eth1.

```
#configure terminal
(config)#interface eth1
(config-if)#ip igmp mroute-proxy eth0
```

ip igmp offlink

Use this command to configure off-link for IGMP.

Use the `no` parameter with this command to remove this configuration.

Command Syntax

```
ip igmp offlink
no ip igmp offlink
```

Parameter

None

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth1
(config-if)#ip igmp offlink

(config-if)#no ip igmp offlink
```

ip igmp proxy-service

Use this command to designate an interface to be the IGMP proxy-service (upstream host-side) interface, thus enabling IGMP host-side protocol operation on this interface. All associated downstream router-side interfaces will have their memberships consolidated on this interface, according to IGMP host-side functionality.

Note: This command should not be used when configuring interfaces enabled for IGMP in association with a multicast-routing protocol, otherwise the behavior will be undefined.

Use the `no` parameter with this command to remove the designation of the interface as an upstream proxy-service interface.

Command Syntax

```
ip igmp proxy-service
no ip igmp proxy-service
```

Parameter

None

Command Mode

Interface mode

Example

The following example designates the eth0 interface as the upstream proxy-service interface.

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp proxy-service
```

ip igmp proxy unsolicited-report-interval

Use this command to set an unsolicited report interval for an interface designated as an IGMP proxy (upstream host-side).

Use the `no` parameter with this command to remove the unsolicited report interval from the interface.

Command Syntax

```
ip igmp proxy unsolicited-report-interval <1000-25500>
no ip igmp proxy unsolicited-report-interval
```

Parameter

`<1000-25500>`	Specify an unsolicited report interval value in milliseconds.

Default

1000 milliseconds

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp proxy unsolicited-report-interval 1234

(config-if)#no ip igmp proxy unsolicited-report-interval
```

ip igmp querier-timeout

Use this command to set the timeout period before the router takes over as the querier for the interface after the previous querier has stopped querying. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

To restore the default value, use the `no` parameter with this command.

Command Syntax

```
ip igmp querier-timeout <60-300>
no ip igmp querier-timeout
```

Parameter

`<60-300>`	Number of seconds that the router waits after the previous querier has stopped querying before it takes over as the querier.

Default

255 seconds

Command Mode

Interface mode

Example

The following example configures the router to wait 120 seconds from the time it received the last query before it takes over as the querier for the interface:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp querier-timeout 120
```

ip igmp query-interval

Use this command to set the frequency of sending IGMP host query messages. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

To return to the default frequency, use the `no` parameter with this command.

Command Syntax

```
ip igmp query-interval <1-18000>
no ip igmp query-interval
```

Parameter

`<1-18000>`	Frequency (in seconds) at which IGMP host query messages are sent.

Default

Default query interval is 125 seconds.

Command Mode

Interface mode

Example

The following example changes the frequency of sending IGMP host-query messages to 2 minutes:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp query-interval 120
```

ip igmp query-max-response-time

Use this command to set the maximum response time advertised in IGMP queries. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

Use the `no` parameter with this command to restore the default value.

Command Syntax

```
ip igmp query-max-response-time <1-240>
no ip igmp query-max-response-time
```

Parameter

`<1-240>`	Maximum response time (in seconds) advertised in IGMP queries.

Default

10 seconds

Command Mode

Interface mode

Example

The following example configures a maximum response time of 8 seconds:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp query-max-response-time 8
```

ip igmp ra-option

Use this command to configure strict RA (Router Advertisement) validation for IGMP.

Use the `no` parameter with this command to restore the default value.

Command Syntax

```
ip igmp ra-option
no ip igmp ra-option
```

Parameter

None

Command Mode

Interface mode

Example

The following example configures a maximum response time of 8 seconds:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp ra-option

(config-if)#no ip igmp ra-option
```

ip igmp robustness-variable

Use this command to set the robustness variable value on an interface. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

To return to the default value on an interface, use the `no` parameter with this command.

Command Syntax

```
ip igmp robustness-variable <2-7>
no ip igmp robustness-variable
```

Parameter

`<2-7>`	Specify the robustness variable value.

Default

Default robustness variable value is 2.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ip igmp robustness-variable 3
```

ip igmp ssm-map enable

Use this command to enable SSM mapping on the router. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

Use the `no` parameter with this command to disable SSM mapping.

Command Syntax

```
ip igmp ssm-map enable
ip igmp (vrf NAME|) ssm-map enable
no ip igmp ssm-map enable
no ip igmp (vrf NAME|) ssm-map enable
```

Parameter

`vrf`	Specify the VRF name.

Command Mode

Configure mode

Example

This example shows how to configure SSM mapping on the router.

```
#configure terminal
(config)#ip igmp ssm-map enable
```

ip igmp ssm-map static

Use this command to specify the static mode of defining SSM mapping. SSM mapping statically assigns sources to IGMPv1 and IGMPv2 groups to translate such (*,G) groups' memberships to (S,G) memberships for use with PIM-SSM. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

Use the `no` parameter with this command to remove the SSM map association.

Command Syntax

```
ip igmp ssm-map static (<1-99>|<1300-1999>|WORD) A.B.C.D
ip igmp (vrf NAME|) ssm-map static (<1-99>|<1300-1999>|WORD) A.B.C.D
no ip igmp (vrf NAME|) ssm-map static (<1-99>|<1300-1999>|WORD) A.B.C.D
no ip igmp ssm-map static (<1-99>|<1300-1999>|WORD) A.B.C.D
```

Parameters

`vrf`	Specify the VRF name.
`<1-99>`	Access-list number.
`<1300-1999>`	Access-list number (expanded range).
`WORD`	Standard IP access-list name.
`A.B.C.D`	Source address to use for static map group.

Command Mode

Configure mode

Examples

This example shows how to configure an SSM static mapping for group-address 224.1.1.1

Note: `access-list` can only be a `permit` type `access-list`

```
#configure terminal
(config)# ip igmp ssm-map static 1 1.2.3.4
(config)# access-list 1 permit 224.1.1.1 0.0.0.255
```

ip igmp static-group

Use this command to statically configure group membership entries on an interface. To statically add only a group membership, do not specify any parameters. This command applies to IGMP operation on a specific interface to statically add group and/or source records; on a VLAN interface to statically add group and/or source records.

Use the `no` parameter with this command to delete static group membership entries.

Command Syntax

```
ip igmp static-group A.B.C.D {(source (A.B.C.D|ssm-map)|) (interface IFNAME|)}
no ip igmp static-group A.B.C.D {(source (A.B.C.D|ssm-map)|) (interface IFNAME|)}
```

Parameters

`A.B.C.D`	Standard IP Multicast group address to be configured as a static group member.
`source`	Static source to be joined.
`A.B.C.D`	Standard IP source address to be configured as a static source from where multicast packets originate.
`ssm-map`	Mode of defining SSM mapping. SSM mapping statically assigns sources to IGMPv1 and IGMPv2 groups to translate these (*, G) groups' memberships to (S, G) memberships for use with PIM-SSM.
`interface`	Physical interface name.
`IFNAME`	Use this parameter on VLAN interfaces when static configuration is required. If used, static configuration is applied to the physical interface. If not used, static configuration is applied on all VLAN constituent interfaces.

Command Mode

Configure mode

Examples

The following examples show how to statically add group and/or source records for IGMP:

```
#configure terminal
(config)#interface eth0
(config-if)#ip igmp static-group 226.1.2.3

#configure terminal
(config)#interface eth0
(config-if)#ip igmp static-group 226.1.2.4 source 1.2.3.4

#configure terminal
(config)#interface eth0
(config-if)#ip igmp static-group 226.1.2.5 source ssm-map
```

ip igmp startup-query-count

Use this command to set a startup query count for IGMP.

Use the `no` parameter with this command to return to the default version.

Command Syntax

```
ip igmp startup-query-count <2-10>
no ip igmp startup-query-count
```

Parameters

`<2-10>`	Specify a startup query count value.

Default

The default value 2.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ip igmp startup-query-count 2

(config-if)#no ip igmp startup-query-count
```

ip igmp startup-query-interval

Use this command to set a query interval value for IGMP.

Use the `no` parameter with this command to return to the default version.

Command Syntax

```
ip igmp startup-query-interval <1-18000>
no ip igmp startup-query-interval
```

Parameters

`<1-18000>`	Specify a startup query interval value in seconds.

Default

The default value 31 seconds.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ip igmp startup-query-interval 1

(config-if)#no ip igmp startup-query-interval
```

ip igmp version

Use this command to set the current IGMP protocol version on an interface. This command applies to interfaces configured for IGMP Layer-3 multicast protocols and IGMP Proxy.

Use the `no` parameter with this command to return to the default version.

Command Syntax

```
ip igmp version <1-3>
no ip igmp version
```

Parameters

`<1-3>`	Specify IGMP protocol version number.

Default

The default IGMP protocol version number is 3.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ip igmp version 2
```

show debugging ip igmp

Use this command to display the status of the debugging of the IGMP system, or a specific VRF in the IGMP system.

Command Syntax

```
show debugging ip igmp
show debugging ip igmp (vrf NAME|)
```

Parameters

`vrf`	Specify the VRF name.

Command Mode

Exec and Privileged Exec mode

Examples

```
#show debugging ip igmp
 IGMP Debugging status:
 IGMP Decoder debugging is on
 IGMP Encoder debugging is on
 IGMP Events debugging is on
 IGMP FSM debugging is on
 IGMP Tree-Info-Base (TIB) debugging is on
```

show ip igmp groups

Use this command to display the multicast groups with receivers connected to the router and learned through IGMP.

Command Syntax

```
show ip igmp groups (detail|)
show ip igmp groups A.B.C.D (detail|)
show ip igmp groups IFNAME (detail|)
show ip igmp groups IFNAME A.B.C.D (detail|)
show ip igmp (vrf NAME|) groups (detail|)
show ip igmp (vrf NAME|) groups A.B.C.D (detail|)
show ip igmp (vrf NAME|) groups IFNAME (detail|)
show ip igmp (vrf NAME|) groups IFNAME A.B.C.D (detail|)
```

Parameters

`vrf`	Specify the VRF name.
`A.B.C.D`	Address of multicast group.
`IFNAME`	Name of the interface.
`detail`	IGMPv3 source information.

Command Mode

Exec and Privileged Exec mode

Examples

The following command displays local-membership information for all interfaces:

```
rtr1#show ip igmp groups detail

Interface:      eth1
Group:          224.1.1.1
Flags:          L
Uptime:         00:00:04
Group mode:     Exclude (Expires: 00:04:15, Static)
Last reporter:   3.3.3.3
Group source list: (R - Remote, M - SSM Mapping, S - Static, L - Local)

Include Source List :
 Source Address Uptime    v3 Exp    Fwd Flags
 2.2.2.2         00:00:04 stopped   Yes L

#
```

show ip igmp interface

Use this command to display the state of IGMP, IGMP Proxy service for a specified interface, or all interfaces.

Command Syntax

```
show ip igmp interface (IFNAME|)
show ip igmp (vrf NAME|) interface (IFNAME|)
```

Parameters

`vrf`	Specify the VRF name.
`interface`	Specify the interface parameter.
`IFNAME`	Specify the name of the interface.

Command Mode

Exec and Privileged Exec mode

Example

The following command displays the IGMP interface status on all interfaces enabled for IGMP.

```
#show ip igmp interface
Interface vlan1.1 (Index 4294967295)
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying router is 0.0.0.0
IGMP query interval is 125 seconds
IGMP querier timeout is 255 seconds
IGMP max query response time is 10 seconds
Last member query response interval is 1000 milliseconds
Group Membership interval is 260 seconds|
#
```

show ip igmp proxy

Use this command to display the state of IGMP Proxy services for a specified interface or for all interfaces.

Command Syntax

```
show ip igmp proxy groups (detail|)
show ip igmp proxy groups A.B.C.D (detail|)
show ip igmp proxy groups IFNAME (detail|)
show ip igmp proxy groups IFNAME A.B.C.D (detail|)
show ip igmp (vrf NAME|) proxy groups (detail|)
show ip igmp (vrf NAME|) proxy groups A.B.C.D (detail|)
show ip igmp (vrf NAME|) proxy groups IFNAME (detail|)
show ip igmp (vrf NAME|) proxy groups IFNAME A.B.C.D (detail|)
```

Parameters

`vrf`	Specify the VRF name.
`groups`	IGMP proxy group membership information.
`A.B.C.D`	Address of multicast group.
`IFNAME`	The name of the VLAN interface.
`detail`	IGMPv3 source information

Command Mode

Exec and Privileged Exec mode

Example

```
#show ip igmp proxy groups detail
```

show ip igmp ssm-map

Use this command to display IGMP SSM-map data.

Command Syntax

```
show ip igmp ssm-map
show ip igmp ssm-map A.B.C.D
show ip igmp (vrf NAME|) ssm-map
show ip igmp (vrf NAME|) ssm-map A.B.C.D
```

Parameters

`vrf`	Specify the VRF name.
`A.B.C.D`	Address of multicast group.

Command Mode

Exec and Privileged Exec mode

Example

```
#show ip igmp ssm-map 123.12.3.123
#
```

CHAPTER 4 MLD Multicast Commands

This chapter describes the commands for Multicast Listener Discovery (MLD) which includes the MLD proxy service.

For MLD multicast snooping commands, see Chapter 6, *L2 MLD Snooping Commands*.

clear ipv6 mld

Use this command to clear MLD local memberships in an interface or group. This command applies to entities configured for MLD layer-3 multicast protocols, MLD snooping, or MLD proxy.

Command Syntax

```
clear ipv6 mld
clear ipv6 mld group *
clear ipv6 mld group X:X::X:X
clear ipv6 mld group X:X::X:X IFNAME
clear ipv6 mld group [*|X:X::X:X (IFNAME)]
clear ipv6 mld interface IFNAME
clear ipv6 mld (vrf NAME|)
clear ipv6 mld (vrf NAME|) group *
clear ipv6 mld (vrf NAME|) group X:X::X:X
clear ipv6 mld (vrf NAME|) group X:X::X:X IFNAME
clear ipv6 mld (vrf NAME|) interface IFNAME
```

Parameter

`vrf`	Specify the VRF name.
`groups`	Clears groups from an interface.
`*`	Clears all groups from an interface.
`X:X::X:X`	Specify an IPv6 interface.
`interface`	Specify the interface parameter.
`IFNAME`	Specify the interface name.

Command Mode

Privileged Exec mode

Example

```
#clear ipv6 mld group *
#clear ipv6 mld group 224.1.1.1
#clear ipv6 mld vrf VRF_A
```

debug ipv6 mld

Use this command to enable debugging of all MLD, or a specific component of MLD. This command applies to interfaces configured for MLD Layer-3 multicast protocols.

Use the `no` parameter with this command to disable all MLD debugging or debugging of a specific component of MLD.

Command Syntax

```
debug ipv6 mld all
debug ipv6 mld decode
debug ipv6 mld encode
debug ipv6 mld events
debug ipv6 mld fsm
debug ipv6 mld tib
debug ipv6 mld (vrf NAME|) all
debug ipv6 mld (vrf NAME|) decode
debug ipv6 mld (vrf NAME|) encode
debug ipv6 mld (vrf NAME|) events
debug ipv6 mld (vrf NAME|) fsm
debug ipv6 mld (vrf NAME|) tib
no debug ipv6 mld all
no debug ipv6 mld decode
no debug ipv6 mld encode
no debug ipv6 mld events
no debug ipv6 mld fsm
no debug ipv6 mld tib
no debug ipv6 mld (vrf NAME|) all
no debug ipv6 mld (vrf NAME|) decode
no debug ipv6 mld (vrf NAME|) encode
no debug ipv6 mld (vrf NAME|) events
no debug ipv6 mld (vrf NAME|) fsm
no debug ipv6 mld (vrf NAME|) tib
```

Parameters

`all`	Debug all MLD.
`decode`	Debug MLD decoding.
`encode`	Debug MLD encoding.
`events`	Debug MLD events.
`fsm`	Debug MLD finite state machine (FSM).
`tib`	Debug MLD tree information base (TIB).

`vrf`	Debug VPN Routing/Forwarding instance.

Command Mode

Privileged Exec mode and Configure mode

Example

```
#configure terminal
(config)#debug mld all
```

ipv6 mld

Use this command to enable the MLD protocol operation on an interface. This command enables MLD protocol operation in stand-alone mode, and can be used to learn local-membership information prior to enabling a multicast routing protocol on the interface. This command will has no effect on interfaces configured for MLD Proxy.

Note: This command can only be issued on VLAN interfaces.

Use the `no` parameter with this command to return all MLD related configuration to the default (including MLD Snooping or MLD Proxy service).

Command Syntax

```
ipv6 mld
no ipv6 mld
```

Parameters

None

Default

Disabled

Command Mode

Interface mode for VLAN interface

Example

```
#configure terminal
(config)#interface eth1
(config-if)#ipv6 mld
```

ipv6 mld access-group

Use this command to control the multicast local-membership groups learnt on an interface. This command applies to interfaces configured for MLD layer-3 multicast protocols, MLD snooping, or MLD proxy.

Note: This command can only be issued on VLAN interfaces.

Use the `no` parameter with this command to disable this access control.

Command Syntax

```
ipv6 mld access-group WORD
no ipv6 mld access-group
```

Parameter

`WORD`	Standard IPv6 access-list name.

Default

No access list configured.

Command Mode

Interface mode for VLAN interface

Examples

In the following example, hosts serviced by Ethernet interface 0 can join the group `ff0e::1/128` only:

```
#configure terminal
(config)#ipv6 access-list Group1 permit ff0e::1/128
(config)#interface fxp0
(config-if)#ipv6 mld access-group Group1
```

ipv6 mld immediate-leave

Use this command to minimize the leave latency of MLD memberships. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy. Use this command when only one receiver host is connected to each interface.

Use the `no` parameter with this command to disable this feature.

Command Syntax

```
ipv6 mld immediate-leave group-list WORD
no ipv6 mld immediate-leave
```

Parameter

`group-list`	Standard IPv6 access-list name that defines multicast groups in which the immediate leave feature is enabled.

Default

Disabled

Command Mode

Interface mode for VLAN interface

Examples

The following example shows how to enable the immediate-leave feature on an interface for a specific range of multicast groups. In this example, the router assumes that the group access-list consists of groups that have only one node membership at a time per interface:

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 mld immediate-leave v6grp
(config-if)#exit
```

ipv6 mld last-member-query-count

Use this command to set the last-member query-count value. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to return to the default value on an interface.

Command Syntax

```
ipv6 mld last-member-query-count <2-7>
no ipv6 mld last-member-query-count
```

Parameters

`<2-7>`	Specify a last-member query-count value.

Default

The default last-member query-count value is 2.

Command Mode

Interface mode for VLAN interface

Example

```
#configure terminal
(config)#interface 0
(config-if)#ipv6 mld last-member-query-count 3
```

ipv6 mld last-member-query-interval

Use this command to set the frequency at which the router sends MLD group-specific host query messages. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to set this frequency to the default value.

Command Syntax

```
ipv6 mld last-member-query-interval <1000-25500>
no ipv6 mld last-member-query-interval
```

Parameter

`<1000-25500>`	Specify a last member query interval value in milliseconds.

Default

The default last-member query-count value is 1000 milliseconds.

Command Mode

Interface mode for VLAN interface

Example

The following example changes the MLD group-specific host query message interval to 2 seconds:

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 mld last-member-query-interval 2000
```

ipv6 mld limit

Use this command to set the limit on the maximum number of group membership states at either the router level, or for the specified interface. Once the specified number of group memberships is reached, all further local-memberships will be ignored. Optionally, an exception access-list can be configured to specify the group-address(es) to be excluded from being subject to the limit.

This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy. When configured for MLD Snooping, this command can be issued on only VLAN interfaces, and the limit applies individually to each of its constituent interfaces.

Use the `no` parameter with this command to unset the limit and any specified exception access-list.

Command Syntax

```
ipv6 mld limit <1-2097152> (except WORD |)
ipv6 mld (vrf NAME|) limit <1-2097152> (except WORD |)
no ipv6 mld limit
```

Parameters

`vrf`	Specify the VRF name.
`<1-2097152>`	Maximum number of group membership states.
`except`	Standard IPv6 access-list name that defines multicast groups which are exempted from being subject to the configured limit.
`WORD`	Specify the standard IPv6 access-list name.

Default

The default value is 0 (zero).

Command Mode

Configure mode and Interface mode

Examples

The following example configures an MLD limit of 100 group-membership states across all interfaces on which MLD is enabled, and excludes group 224.1.1.1 from this limitation:

```
#configure terminal
(config)#ipv6 mld limit 100 except v6grp
```

The following example configures an MLD limit of 100 group-membership states on eth0:

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 mld limit 100
```

ipv6 mld mroute-proxy

Use this command to specify the MLD Proxy service (upstream host-side) interface with which to be associated. MLD router-side protocol operation is enabled only when the specified upstream proxy-service interface is functional. This command should not be configured on interfaces enabled for MLD in association with a multicast routing protocol; otherwise, the behavior will be undefined.

Use the `no` parameter with this command to remove the association with the proxy-service interface.

Command Syntax

```
ipv6 mld mroute-proxy IFNAME
no ipv6 mld mroute-proxy
```

Parameters

`IFNAME`	Specify the interface name.

Command Mode

Interface mode

Example

The following example configures the eth0 interface as the upstream proxy-service interface for the downstream router-side interface, eth1.

```
#configure terminal
(config)#interface eth1
(config-if)#ipv6 mld mroute-proxy eth0
```

ipv6 mld proxy-service

Use this command to designate an interface to be the MLD proxy-service (upstream host-side) interface, thus enabling MLD host-side protocol operation on this interface. All associated downstream router-side interfaces will have their memberships consolidated on this interface, according to MLD host-side functionality.

This command should not be used when configuring interfaces enabled for MLD in association with a multicast-routing protocol, otherwise the behavior will be undefined.

Use the `no` parameter with this command to remove the designation of the interface as an upstream proxy-service interface.

Command Syntax

```
ipv6 mld proxy-service
no ipv6 mld proxy-service
```

Parameters

None

Command Mode

Interface mode

Example

The following example designates the eth0 interface as the upstream proxy-service interface.

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 mld proxy-service
```

ipv6 mld querier-timeout

Use this command to configure the timeout period before the router takes over as the querier for the interface after the previous querier has stopped querying. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to restore the default value.

Command Syntax

```
ipv6 mld querier-timeout <60-300>
no ipv6 mld querier-timeout
```

Parameter

`<60-300>`	Number of seconds that the router waits after the previous querier has stopped querying before it takes over as the querier.

Command Mode

Interface mode

Example

The following example configures the router to wait 120 seconds from the time it received the last query before it takes over as the querier for the interface:

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 mld querier-timeout 120
```

ipv6 mld query-interval

Use this command to set the frequency of sending MLD host query messages. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to return to the default frequency.

Command Syntax

```
ipv6 mld query-interval <1-18000>
no ipv6 mld query-interval
```

Parameter

`<1-18000>`	Frequency (in seconds) at which MLD host query messages are sent.

Default

125 seconds.

Command Mode

Interface mode

Example

The following example changes the frequency of sending MLD host-query messages to 2 minutes:

```
#configure terminal
(config)#interface fxp0
(config-if)#ipv6 mld query-interval 120
```

ipv6 mld query-max-response-time

Use this command to set the maximum response time advertised in MLD queries. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to restore the default value.

Command Syntax

```
ipv6 mld query-max-response-time <1-240>
no ipv6 mld query-max-response-time
```

Parameter

`<1-240>`	Maximum response time (in seconds) advertised in MLD queries.

Default

10 seconds

Command Mode

Interface mode

Example

The following example configures a maximum response time of 8 seconds:

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 mld query-max-response-time 8
```

ipv6 mld robustness-variable

Use this command to set the robustness variable value on an interface. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to return to the default value on an interface.

Command Syntax

```
ipv6 mld robustness-variable <2-7>
no ipv6 mld robustness-variable
```

Parameter

`<2-7>`	Specify a robustness variable value in seconds.

Default

Default robustness value is 2 seconds.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ipv6 mld robustness-variable 3
```

ipv6 mld ssm-map enable

Use this command to enable SSM mapping on the router. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to disable SSM mapping.

Command Syntax

```
ipv6 mld ssm-map enable
ipv6 mld (vrf NAME|) ssm-map enable
no ipv6 mld ssm-map enable
no ipv6 mld (vrf NAME|) ssm-map enable
```

Parameter

`vrf`	Specify the VRF name.

Command Mode

Interface mode for VLAN interface

Example

This example shows how to enable MLD SSM mapping on the router.

```
#configure terminal
(config)#ipv6 mld ssm-map enable
```

ipv6 mld ssm-map static

Use this command to specify the static mode of defining SSM mapping. SSM mapping statically assigns sources to MLDv1 groups to translate such (*,G) groups' memberships to (S,G) memberships for use with PIM-SSM. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to remove the SSM map association.

Command Syntax

```
ipv6 mld ssm-map static WORD X:X::X:X
ipv6 mld (vrf NAME|) ssm-map static WORD X:X::X:X
no ipv6 mld ssm-map static WORD X:X::X:X
no ipv6 mld (vrf NAME|) ssm-map static WORD X:X::X:X
```

Parameters

`vrf`	Specify the VRF name.
`WORD`	Specify IPv6 named standard access-list.
`X:X::X:X`	Specify IPv6 address.

Command Mode

Interface mode for VLAN interface

Example

This example shows how to configure an SSM static mapping for group-address ff0e::1/128.

```
#configure terminal
(config)#ipv6 mld ssm-map static v6grp 2006::3
(config)#ipv6 access-list v6grp permit ff0e::1/128
```

ipv6 mld startup-query-count

Use this command to configure a startup query count for MLD.

Use the no parameter with this command to return to the default version.

Command Syntax

```
ipv6 mld startup-query-count <2-10>
no ipv6 mld startup-query-count
```

Parameters

<2-10>	Specify a startup query count value.

Default

The default value 2.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ipv6 mld startup-query-count 2

(config-if)#no ipv6 mld startup-query-count
```

ipv6 mld startup-query-interval

Use this command to configure a query interval value for MLD.

Use the no parameter with this command to return to the default version.

Command Syntax

```
ipv6 mld startup-query-interval <1-18000>
no ipv6 mld startup-query-interval
```

Parameters

<1-18000>	Specify a startup query interval value in seconds.

Default

The default value 31 seconds.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ipv6 mld startup-query-interval 1

(config-if)#no ipv6 mld startup-query-interval
```

ipv6 mld static-group

Use this command to statically configure IPv6 group membership entries on an interface. To statically add only a group membership, do not specify any parameters. This command applies to MLD operation on a specific interface to statically add group and/or source records; or to MLD Snooping on a VLAN interface to statically add group and/or source records.

Use the `no` parameter with this command to delete static group membership entries.

Command Syntax

```
ipv6 mld static-group X:X::X:X {(source (X:X::X:X|ssm-map)|) (interface IFNAME|)}
no ipv6 mld static-group X:X::X:X {(source (X:X::X:X|ssm-map)|) (interface
  IFNAME|)}
```

Parameters

`X:X::X:X`	Standard IPv6 Multicast group address to be configured as a static group member.
`interface`	Physical interface. Use this parameter on a VLAN when a static configuration is required for MLD snooping. If used, static configuration is applied to the physical interface. If not used, static configuration is applied on all VLAN constituent interfaces.
`IFNAME`	Physical interface name.
`source`	Static source to be joined.
`X:X::X:X`	Standard IPv6 source address to be configured as a static source from where multicast packets originate.
`ssm-map`	Mode of defining SSM mapping. SSM mapping statically assigns sources to MLDv1 groups to translate these (*,G) groups' memberships to (S,G) memberships for use with PIM-SSM.

Command Mode

Interface mode for VLAN interface

Examples

The following examples show how to statically add group and/or source records for MLD Snooping:

```
#configure terminal
(config)#interface vlan1.1
(config-if)#ipv6 mld static-group ff1e::10

(config)#interface vlan1.1
(config-if)#ipv6 mld static-group ff1e::10 source fe80::2fd:6cff:fe1c:b

(config)#interface vlan1.1
(config-if)#ipv6 mld static-group ff1e::10 source ssm-map
(config)#interface vlan1.1
(config-if)#ipv6 mld static-group ff1e::10 interface eth0
```

ipv6 mld version

Use this command to set the current MLD protocol version on an interface. This command applies to interfaces configured for MLD Layer-3 multicast protocols, MLD Snooping, or MLD Proxy.

Use the `no` parameter with this command to return to the default version on an interface.

Command Syntax

```
ipv6 mld version <1-2>
no ipv6 mld version
```

Parameter

`<1-2>`	Specify a MLD protocol version number.

Default

Default MLD protocol version number is 2.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface 0
(config-if)#ipv6 mld version 1
```

show debugging ipv6 mld

Use this command to display debugging information for MLD.

Command Syntax

```
show debugging ipv6 mld
show debugging ipv6 mld (vrf NAME|)
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.

Command Mode

Privileged Exec mode

Examples

The following is a sample output of the `show debugging mld` command:

```
#show debugging ipv6 mld
MLD Debugging status:
  MLD Decoder debugging is off
  MLD Encoder debugging is off
  MLD Events debugging is off
  MLD FSM debugging is off
  MLD Tree-Info-Base (TIB) debugging is off
#
```

show ipv6 mld groups

Use this command to display the multicast groups with receivers directly connected to the router, and learned through MLD.

Command Syntax

```
show ipv6 mld groups (detail|)
show ipv6 mld groups IFNAME (detail|)
show ipv6 mld groups IFNAME X:X::X:X (detail|)
show ipv6 mld groups X:X::X:X (detail|)
show ipv6 mld (vrf NAME|) groups (detail|)
show ipv6 mld (vrf NAME|) groups IFNAME (detail|)
show ipv6 mld (vrf NAME|) groups IFNAME X:X::X:X (detail|)
show ipv6 mld (vrf NAME|) groups X:X::X:X (detail|)
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.
`X:X::X:X`	Displays the multicast group address.
`IFNAME`	Interface name for which to display local information.
`detail`	MLDv2 source information.

Command Mode

Exec mode and Privileged Exec mode

Example

The following command displays local-membership information for all interfaces:

```
#show ipv6 mld groups
MLD Connected Group Membership
Group Address    Interface     Uptime      Expires    Last Reporter
ff1e::10         ge10          00:03:16    00:01:09   fe80::202:b3ff:fef0:79d8
```

show ipv6 mld interface

Use this command to display the state of MLD, MLD Proxy service, and MLD Snooping for a specified interface, or all interfaces.

Command Syntax

```
show ipv6 mld interface (IFNAME|)
show ipv6 mld (vrf NAME|) interface (IFNAME|)
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.
`IFNAME`	Interface name for which to display local information.

Command Mode

Exec mode and Privileged Exec mode

Example

The following displays MLD interface status on all interfaces enabled for MLD.

```
#show ipv6 mld interface
Interface eth1 (Index 2)
 MLD Enabled, Active, Querier, Version 2 (default)
 Internet address is fe80::2fd:6cff:fe1c:b
 MLD interface has 0 group-record states
 MLD activity: 0 joins, 0 leaves
 MLD query interval is 125 seconds
 MLD querier timeout is 255 seconds
 MLD max query response time is 10 seconds
 Last member query response interval is 1000 milliseconds
 Group Membership interval is 260 seconds
#
```

show ipv6 mld ssm-map

Use this command to display MLD SSM (source-specific-multicast) mapping.

Command Syntax

```
show ipv6 mld ssm-map
show ipv6 mld ssm-map X:X::X:X
show ipv6 mld (vrf NAME|) ssm-map X:X::X:X
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.
`X:X::X:X`	Displays the multicast group address.

Command Mode

Exec mode and Privileged Exec mode

Example

The following is an example of this command:

```
#show ipv6 mld ssm-map
SSM Mapping : Enabled
Database    : None configured

#
```

CHAPTER 5 L2 IGMP Snooping Multicast Commands

This chapter describes commands for Internet Group Management Protocol (IGMP) multicast snooping.

igmp snooping

Use this command to enable IGMP Snooping. When this command is given in the Configure mode, IGMP snooping is enabled at switch level on all the vlans in switch. When this command is given at the VLAN interface level, IGMP Snooping is enabled for that VLAN.

Note: IGMP Snooping can only be configured on VLAN interfaces.

Use the `no` parameter with this command to globally disable IGMP Snooping, or for the specified interface.

Command Syntax

```
igmp snooping
no igmp snooping
```

Parameter

None

Default

IGMP Snooping is enabled.

Command Mode

Interface mode for VLAN interface

Configuration mode

Example

```
#configure terminal
(config)#igmp snooping
(config)#interface vlan1.1
(config-if)#igmp snooping
```

igmp snooping fast-leave

Use this command to enable IGMP Snooping fast-leave processing. Fast-leave processing is analogous to immediate-leave processing; the IGMP group-membership is removed, as soon as an IGMP leave group message is received without sending out a group-specific query.

Use the `no` parameter with this command to disable fast-leave processing.

Command Syntax

```
igmp snooping fast-leave
no igmp snooping fast-leave
```

Parameters

None

Default

IGMP Snooping fast-leave processing is disabled.

Command Mode

Interface mode for VLAN interface

Example

This example shows how to enable fast-leave processing on a VLAN.

```
#configure terminal
(config)#interface vlan1.1
(config-if)#igmp snooping fast-leave
```

igmp snooping mrouter

Use this command to statically configure the specified VLAN constituent interface as a multicast router interface for IGMP Snooping in that VLAN.

Use the `no` parameter with this command to remove the static configuration of the interface as a multicast router interface.

Command Syntax

```
igmp snooping mrouter interface IFNAME
no igmp snooping mrouter interface IFNAME
```

Parameter

`interface`	Specify the interface parameter.
`IFNAME`	Specify the name of the interface.

Default

IGMP Snooping mrouter processing is disabled.

Command Mode

Interface mode for VLAN interface.

Example

This example shows interface fe8 statically configured to be a multicast router interface.

```
#configure terminal
(config)#interface vlan1.1
(config-if)#igmp snooping mrouter interface fe8
```

igmp snooping querier

Use this command to enable IGMP snooping querier functionality on a VLAN when IGMP is not enabled on the particular VLAN. When enabled, the IGMP Snooping querier sends out periodic IGMP queries for all interfaces on that VLAN.

The IGMP Snooping querier uses the 0.0.0.0 source IP address, because it only masquerades as a proxy IGMP querier for faster network convergence. It does not start, or automatically cease, the IGMP Querier operation if it detects query message(s) from a multicast router. It restarts as the IGMP Snooping querier if no queries are seen within the other querier interval.

Use the `no` parameter with this command to disable IGMP querier configuration.

Command Syntax

```
igmp snooping querier
no igmp snooping querier
```

Default

By default, Querier is disabled

Parameters

None

Command Mode

Interface mode for VLAN interface.

Example

```
#configure terminal
(config)#interface vlan1.1
(config-if)#igmp snooping querier
```

igmp snooping report-suppression

Use this command to enable report suppression for IGMP version 1, 2 and 3 reports. By default report suppression is enabled.

Use the `no` parameter with this command to disable report suppression.

Command Syntax

```
igmp snooping report-suppression
```

```
no igmp snooping report-suppression
```

Default

By default, report suppression is enabled.

Parameters

None

Command Mode

Interface mode for VLAN interface.

Example

This example shows how to enable report suppression for IGMPv2 reports.

```
#configure terminal
(config)#interface vlan1.1
(config-if)#igmp snooping report-suppression
```

show igmp snooping mrouter

Use this command to display the multicast router interfaces, both configured and learned, in a VLAN.

Command Syntax

```
show igmp snooping mrouter IFNAME
show igmp (vrf NAME|) snooping mrouter IFNAME
```

Parameters

`vrf`	Specify the VRF name.
`IFNAME`	Specify the name of the interface.

Command Mode

Exec and Privileged Exec mode

Example

The following command displays the multicast router interfaces in VLAN 1.1.

```
#show igmp snooping mrouter vlan1.1
VLAN    Interface
1       ge9
1       ge11
#
```

show igmp snooping statistics

Use this command to display IGMP Snooping statistics data.

Command Syntax

```
show igmp snooping statistics interface IFNAME
show igmp (vrf NAME|) snooping statistics interface IFNAME
```

Parameters

`vrf`	Specify the VRF name.
`interface`	Specify the interface parameter.
`IFNAME`	Specify the name of the interface.

Command Mode

Exec and Privileged Exec mode

Example

The following displays IGMPv3 statistical information for bridge 2.

```
#show igmp snooping statistics interface vlan1.1
IGMP Snooping statistics for ge9
Interface:      ge10
Group:          225.0.0.1
Uptime:         00:00:09
Group mode:     Exclude (Expires: 00:04:10)
Last reporter:  4.4.4.5
Source list is empty
#
```

CHAPTER 6 L2 MLD Snooping Commands

This chapter describes commands for Multicast Listener Discovery (MLD) snooping.

mld snooping

Use this command to enable MLD Snooping. When this command is given in the Configure mode, MLD Snooping is enabled at the switch level. When this command is given at the VLAN interface level, MLD Snooping is enabled for that VLAN.

Use the `no` parameter with this command to globally disable MLD Snooping, or for the specified interface.

Command Syntax

```
mld snooping
mld (vrf NAME|) snooping
no mld snooping
no mld (vrf NAME|) snooping
```

Parameter

`vrf`	Specify the VRF name.

Default

MLD Snooping is enabled.

Command Mode

Configure mode and Interface mode for VLAN interface

Example

```
#configure terminal
(config)#mld snooping
(config)#interface vlan1.1
(config-if)#mld snooping
```

mld snooping fast-leave

Use this command to enable MLD Snooping fast-leave processing. Fast-leave processing is analogous to immediate-leave processing; the MLD group-membership is removed, as soon as an MLD leave group message is received without sending out a group-specific query.

Use the `no` parameter with this command to disable fast-leave processing.

Command Syntax

```
mld snooping fast-leave
no mld snooping fast-leave
```

Parameters

None

Default

MLD Snooping fast-leave processing is disabled.

Command Mode

Interface mode for VLAN interface

Example

This example shows how to enable fast-leave processing on a VLAN.

```
#configure terminal
(config)#interface vlan1.1
(config-if)#mld snooping fast-leave
```

mld snooping mrouter

Use this command to statically configure the specified VLAN constituent interface as a multicast router interface for MLD Snooping in that VLAN.

Use the `no` parameter with this command to remove the static configuration of the interface as a multicast router interface.

Command Syntax

```
mld snooping mrouter interface IFNAME
no mld snooping mrouter interface IFNAME
```

Parameters

IFNAME	Specify the name of the interface.

Command Mode

Interface mode for VLAN interface

Example

This example shows how to specify the next-hop interface to the multicast router.

```
#configure terminal
(config)#interface vlan1.1
(config-if)#mld snooping mrouter interface fe8
```

mld snooping querier

Use this command to enable MLD querier operation on a subnet (VLAN) when no multicast routing protocol is configured in the subnet (VLAN). When enabled, the MLD Snooping querier sends out periodic MLD queries for all interfaces on that VLAN.

The MLD Snooping querier uses the 0.0.0.0 source IP address, because it masquerades as a proxy MLD querier for faster network convergence. It does not start or automatically cease the MLD querier operation if it detects a query message from a multicast router. It restarts as MLD snooping querier if no queries are seen within another querier interval.

Note: This command can only be configured on VLAN interfaces.

Use the `no` parameter with this command to disable MLD querier configuration.

Command Syntax

```
mld snooping querier
no mld snooping querier
```

Default

By default MLD snooping querier is disabled

Parameters

None

Command Mode

Interface mode for VLAN interface

Example

```
#configure terminal
(config)#interface vlan1.1
(config-if)#mld snooping querier
```

mld snooping report-suppression

Use this command to enable report suppression for MLD version 1.

Note: MLD Snooping command can only be configured on VLAN interfaces.

Use the `no` parameter to disable report suppression.

Command Syntax

```
mld snooping report-suppression
no mld snooping report-suppression
```

Default

By default, mld snooping report suppression is enabled

Parameters

None

Default

Report suppression does not apply to MLDv2, so it is turned off by default for MLDv1 reports.

Command Mode

Interface mode for VLAN interface

Example

This example shows how to enable report suppression for MLDv1 reports.

```
#configure terminal
(config)#interface vlan1.1
(config-if)#mld version 1
(config-if)#mld snooping report-suppression
```

show debugging mld

Use this command to display debugging information for MLD.

Command Syntax

```
show debugging mld
show debugging mld (vrf NAME|)
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.

Command Mode

Privileged Exec mode

Examples

The following is a sample output of the `show debugging mld` command:

```
#show debugging nsm
show debugging mld
MLD Debugging status:
  MLD Decoder debugging is off
  MLD Encoder debugging is off
  MLD Events debugging is off
  MLD FSM debugging is off
  MLD Tree-Info-Base (TIB) debugging is off
#
```

show mld snooping mrouter

Use this command to display the multicast router interfaces, both configured and learned, in a VLAN.

Command Syntax

```
show mld snooping mrouter IFNAME
show mld (vrf NAME|) snooping mrouter IFNAME
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.
`IFNAME`	The name of the VLAN interface

Command Mode

Exec mode and Privileged Exec mode

Example

The following displays the multicast router interfaces in VLAN 1.1

```
#show mld snooping mrouter vlan1.1
VLAN    Interface
1       ge9
1       ge11
```

show mld snooping statistics

Use this command to display MLD Snooping statistics data.

Command Syntax

```
show mld snooping statistics interface IFNAME
show mld (vrf NAME|) snooping statistics interface IFNAME
```

Parameters

`vrf`	Indicates the `vrf` keyword.
`NAME`	Displays the VRF name.
`IFNAME`	The name of the VLAN interface

Command Mode

Exec mode and Privileged Exec mode

Example

The following displays MLDv2 statistical information for the ge10 interface.

```
#show mld snooping statistics ge10
Interface:      ge10
Group:          ff1e::10
Uptime:         00:00:13
Group mode:     Include
Last reporter:  fe80::202:b3ff:fef0:79d8
Group source list: (R - Remote, M - SSM Mapping)
  Source Address        Uptime    v2 Exp    Fwd  Flags
  7ffe::4               00:00:13  00:04:06  Yes  R
#
```

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