ZebOS-XP®
Network Platform

Version 1.4
Extended Performance

Protocol Independent Multicasting
Command Reference

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Contents

Preface

This document describes the ZebOS-XP commands for Protocol Independent Multicast (PIM).

Audience

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

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:

- Chapter 1, *Command Line Interface*
- Chapter 2, *PIMv4 Commands*
- Chapter 3, *PIMv6 Commands*

Related Documents

The following guides are related to this document:

- *Protocol Independent 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 pim`
`lowercase`	Keywords that you enter exactly as shown in the command syntax.	`show debugging pim`
`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.

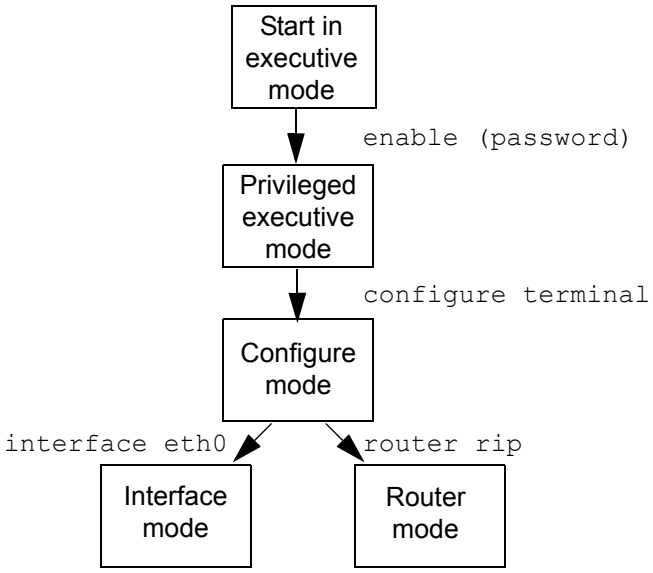

Figure 1-1: Common command modes

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 PIMv4 Commands

The chapter includes the commands that support the Protocol-Independent Multicast (PIM).

Note: PIM-SMDM, BIDIR-PIM and PIM-ECMP are not supported for ZebIC releases.

clear ip mroute

Use this command to delete all multicast route table entries and all multicast routes at the PIM protocol level.

Command Syntax

```
clear ip mroute *
clear ip mroute * pim (dense-mode|sparse-mode)
clear ip mroute A.B.C.D
clear ip mroute A.B.C.D A.B.C.D
clear ip mroute A.B.C.D A.B.C.D pim (dense-mode|sparse-mode)
clear ip mroute A.B.C.D pim sparse-mode
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|) * pim (dense-mode|sparse-mode)
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|) A.B.C.D A.B.C.D pim (dense-mode|sparse-mode)
clear ip mroute (vrf NAME|) A.B.C.D pim sparse-mode
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

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`*`	Delete all multicast routes
`pim`	Group IP address
`A.B.C.D`	Clears group IP address
`A.B.C.D`	Clears source IP address
`dense-mode`	Clears multicast rout table for PIM dense-mode
`sparse-mode`	Clears multicast route table for PIM sparse mode
`statistics`	Clears multicast route statistics

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ip mroute * pim sparse-mode
#clear ip mroute 224.2.2.2 4.4.4.4 pim sparse-mode
```

clear ip msdp peer

Use this command to clear the TCP connection to a Multicast Source Discovery Protocol (MSDP) peer.

This command closes the TCP connection to the peer, resets all the MSDP peer statistics, and clears the input and output queues to and from the MSDP peer.

Command Syntax

```
clear ip msdp peer (A.B.C.D|)
clear ip msdp (vrf NAME|) peer (A.B.C.D|)
```

Parameters

A.B.C.D	IPv4 address of peer
NAME	Name of the VPN routing/forwarding instance

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ip msdp peer 192.168.1.26
```

clear ip msdp sa-cache

Use this command to clear Multicast Source Discovery Protocol (MSDP) Source-Active (SA) cache entries.

Command Syntax

```
clear ip msdp sa-cache (A.B.C.D |)
clear ip msdp (vrf NAME|) sa-cache (A.B.C.D |)
```

Parameters

A.B.C.D	Multicast group address; if not specified, all SA cache entries are cleared
NAME	Name of the VPN routing/forwarding instance

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ip msdp sa-cache 225.25.25.1
```

clear ip pim sparse-mode

Use this command to clear all rendezvous point (RP) sets learned through the PIMv2 Bootstrap Router (BSR).

Command Syntax

```
clear ip pim sparse-mode bsr rp-set *
clear ip pim (vrf NAME|) sparse-mode bsr rp-set *
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`rp-set`	PIMv2 bootstrap router RP set
`*`	Clear all RP sets

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ip pim sparse-mode bsr rp-set *
```

debug ip pim

Use this command to enable debugging for PIM.

Use the `no` option with this command to deactivate debugging for PIM.

Command Syntax

```
debug ip pim (all|events|mfc|mib|mtrace|nexthop|nsm|packet|state|timer)
debug ip pim (vrf NAME|)(all|events|mfc|mib|mtrace|nexthop|nsm|packet|state|timer)
no debug ip pim (all|events|mfc|mib|mtrace|nexthop|nsm|packet|state|timer)
no debug ip pim (vrf NAME|) (all|events|mfc|mib|mtracenexthop|nsm|packet
  |state|timer)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`all`	Enable debugging for all PIM events
`events`	Enable debugging for general configuration, Virtual Routing (VR), and VRF context
`mfc`	Enable debugging for MFC updates
`mib`	Enable debugging for MIB entries
`mtrace`	Enable debugging for MTRACE messages
`nexthop`	Enable debugging for Reverse Path Forwarding (RPF) neighbor nexthop cache handling
`nsm`	Enable debugging for NSM
`packet`	Enable debugging for PIM packets
`state`	Enable debugging for PIM states
`timer`	Enable debugging for PIM timers

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Examples

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

debug ip pim packet

Use this command to activate debugging of incoming or outgoing PIM packets.

Use the `no` option with this command to deactivate debugging of incoming or outgoing PIM packets.

Command Syntax

```
debug ip pim packet
debug ip pim packet in
debug ip pim packet out
debug ip pim (vrf NAME|) packet
debug ip pim (vrf NAME|) packet in
debug ip pim (vrf NAME|) packet out
no debug ip pim packet
no debug ip pim packet in
no debug ip pim packet out
no debug ip pim (vrf NAME|) packet
no debug ip pim (vrf NAME|) packet in
no debug ip pim (vrf NAME|) packet out
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`in`	Debug incoming packets
`out`	Debug outgoing packets

Command Mode

Configure and Privileged Exec modes

Example

```
#configure terminal
(config)#debug ip pim packet in
```

debug pim all

Use this command to enable debugging of all PIM events.

Use the `no` option with this command to disable debugging for PIM.

Command Syntax

```
debug pim all
debug pim (vrf NAME|) all
no debug pim all
no debug pim (vrf NAME|) all
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug pim all
```

debug ip pim timer assert

Use this command to enable debugging of the PIM assert timers.

Use the `no` option with this command to disable debugging for PIM assert timers.

Command Syntax

```
debug ip pim timer assert
debug ip pim timer assert at
debug ip pim (vrf NAME|) timer assert
debug ip pim (vrf NAME|) timer assert at
no debug ip pim timer assert
no debug ip pim timer assert at
no debug ip pim (vrf NAME|) timer assert
no debug ip pim (vrf NAME|) timer assert at
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`at`	Use this option to turn on or off debugging of the PIM Assert Timer

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ip pim timer assert at
```

debug ip pim timer bsr

Use this command to enable debugging of PIM BSR time.

Use the `no` option with this command to disable debugging of the PIM BSR timer.

Command Syntax

```
debug ip pim timer bsr
debug ip pim timer bsr bst
debug ip pim timer bsr crp
debug ip pim (vrf NAME|) timer bsr
debug ip pim (vrf NAME|) timer bsr bst
debug ip pim (vrf NAME|) timer bsr crp
no debug ip pim timer bsr
no debug ip pim timer bsr bst
no debug ip pim timer bsr crp
no debug ip pim (vrf NAME|) timer bsr
no debug ip pim (vrf NAME|) timer bsr bst
no debug ip pim (vrf NAME|) timer bsr crp
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`bst`	Turn on or turn off the bootstrap debugging timer
`crp`	Turn on or turn off the Candidate-RP debugging timer

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#configure terminal
(config)#debug ip pim timer bsr bst
```

debug ip pim timer hello

Use this command to enable debugging of various PIM Hello timers.

Use the `no` option with this command to disable debugging of the PIM Hello timers.

Command Syntax

```
debug ip pim timer hello
debug ip pim timer hello ht
debug ip pim timer hello nlt
debug ip pim timer hello tht
debug ip pim (vrf NAME|) timer hello
debug ip pim (vrf NAME|) timer hello ht
debug ip pim (vrf NAME|) timer hello nlt
debug ip pim (vrf NAME|) timer hello tht
no debug ip pim timer hello
no debug ip pim timer hello ht
no debug ip pim timer hello nlt
no debug ip pim timer hello tht
no debug ip pim (vrf NAME|) timer hello
no debug ip pim (vrf NAME|) timer hello ht
no debug ip pim (vrf NAME|) timer hello nlt
no debug ip pim (vrf NAME|) timer hello tht
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`ht`	Turn on or turn off the PIM Hello debugging timer (ht)
`nlt`	Turn on or turn off the PIM Neighbor Liveliness debugging timer (nlt)
`tht`	Turn on or turn off the Triggered Hello Timer (tht)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#configure terminal
(config)#debug ip pim timer hello ht
```

debug ip pim timer joinprune

Use this command to enable debugging of various PIM JoinPrune timers.

Use the no option with this command to disable the debugging of the PIM JoinPrune timers.

Command Syntax

```
debug ip pim timer joinprune
debug ip pim timer joinprune et
debug ip pim timer joinprune kat
debug ip pim timer joinprune jt
debug ip pim timer joinprune ot
debug ip pim timer joinprune ppt
debug ip pim (vrf NAME|) timer joinprune
debug ip pim (vrf NAME|) timer joinprune et
debug ip pim (vrf NAME|) timer joinprune kat
debug ip pim (vrf NAME|) timer joinprune jt
debug ip pim (vrf NAME|) timer joinprune ot
debug ip pim (vrf NAME|) timer joinprune ppt
no debug ip pim timer joinprune
no debug ip pim timer joinprune et
no debug ip pim timer joinprune kat
no debug ip pim timer joinprune jt
no debug ip pim timer joinprune ot
no debug ip pim timer joinprune ppt
no debug ip pim (vrf NAME|) timer joinprune
no debug ip pim (vrf NAME|) timer joinprune et
no debug ip pim (vrf NAME|) timer joinprune kat
no debug ip pim (vrf NAME|) timer joinprune jt
no debug ip pim (vrf NAME|) timer joinprune ot
no debug ip pim (vrf NAME|) timer joinprune ppt
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`et`	Turn on or turn off the PIM JoinPrune expiry timer (et)
`jt`	Turn on or turn off the PIM JoinPrune upstream Join Timer (jt)
`kat`	Turn on or turn off the PIM JoinPrune Keep Alive timer (kat)
`ot`	Turn on or turn off the PIM JoinPrune Upstream Override Timer (ot)
`ppt`	Turn on or turn off the PIM JoinPrune PrunePending Timer ((ppt)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ip pim timer joinprune et
```

debug ip pim timer joinprune

Use this command to enable debugging of various PIM JoinPrune timers.

Use the no option with this command to disable the debugging of the PIM JoinPrune timers.

Command Syntax

```
debug ip pim timer joinprune
debug ip pim timer joinprune et
debug ip pim timer joinprune kat
debug ip pim timer joinprune jt
debug ip pim timer joinprune ot
debug ip pim timer joinprune ppt
debug ip pim (vrf NAME|) timer joinprune
debug ip pim (vrf NAME|) timer joinprune et
debug ip pim (vrf NAME|) timer joinprune kat
debug ip pim (vrf NAME|) timer joinprune jt
debug ip pim (vrf NAME|) timer joinprune ot
debug ip pim (vrf NAME|) timer joinprune ppt
no debug ip pim timer joinprune
no debug ip pim timer joinprune et
no debug ip pim timer joinprune kat
no debug ip pim timer joinprune jt
no debug ip pim timer joinprune ot
no debug ip pim timer joinprune ppt
no debug ip pim (vrf NAME|) timer joinprune
no debug ip pim (vrf NAME|) timer joinprune et
no debug ip pim (vrf NAME|) timer joinprune kat
no debug ip pim (vrf NAME|) timer joinprune jt
no debug ip pim (vrf NAME|) timer joinprune ot
no debug ip pim (vrf NAME|) timer joinprune ppt
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`et`	Turn on or turn off the PIM JoinPrune expiry timer (et)
`jt`	Turn on or turn off the PIM JoinPrune upstream Join Timer (jt)
`kat`	Turn on or turn off the PIM JoinPrune Keep Alive timer (kat)
`ot`	Turn on or turn off the PIM JoinPrune Upstream Override Timer (ot)
`ppt`	Turn on or turn off the PIM JoinPrune PrunePending Timer ((ppt)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ip pim timer joinprune et
```

debug ip pim timer register

Use this command to enable the PIM register timer's debugging.

Use the no option with this command to disable the PIM register timer's debugging.

Command Syntax

```
debug ip pim timer register
debug ip pim timer register rst
debug ip pim (vrf NAME|) timer register
debug ip pim (vrf NAME|) timer register rst
no debug ip pim timer register
no debug ip pim timer register rst
no debug ip pim (vrf NAME|) timer register
no debug ip pim (vrf NAME|) timer register rst
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`rst`	Turn on or turn off the PIM Register Stop Timer (rst)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ip pim timer register
```

ip msdp default-peer

Use this command to set a Multicast Source Discovery Protocol (MSDP) peer from which to accept Source-Active (SA) messages.

You can have multiple active default peers:

- When you enter multiple `ip msdp default-peer` commands *with* a `prefix-list` keyword, all the default peers are used at the same time for different RP prefixes. This form is typically used in a service provider cloud that connects stub site clouds.
- When you enter multiple `ip msdp default-peer` commands *without* a `prefix-list` keyword, a single active peer accepts all SA messages. If that peer fails, the next configured default peer accepts all SA messages. This form is typically used at a stub site.

Use the `no` option with this command to stop accepting SA messages from a peer.

Command Syntax

```
ip msdp default-peer A.B.C.D (prefix-list (<1-99>|WORD)|)
ip msdp (vrf NAME|) default-peer A.B.C.D (prefix-list (<1-99>|WORD)|)
no ip msdp default-peer A.B.C.D
no ip msdp (vrf NAME|) default-peer A.B.C.D
```

Parameters

`A.B.C.D`	IPv4 address of a previously configured MSDP peer
`prefix-list`	Make this the default peer only for an access list of rendezvous points (RPs):
`<1-99>`	Access list number
`WORD`	Access list name
`NAME`	Name of the VPN routing/forwarding instance

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip msdp default-peer 192.168.1.26 prefix-list 35
```

ip msdp mesh-group

Use this command to add a Multicast Source Discovery Protocol (MSDP) peer to a mesh group.

You can set up multiple mesh groups on the same device and multiple peers per mesh group.

Use the `no` option with this command to remove a peer from a mesh group.

Command Syntax

```
ip msdp mesh-group WORD A.B.C.D
ip msdp (vrf NAME|) mesh-group WORD A.B.C.D
no ip msdp mesh-group WORD A.B.C.D
no ip msdp (vrf NAME|) mesh-group WORD A.B.C.D
```

Parameters

`WORD`	Name of the mesh group
`A.B.C.D`	IPv4 address of peer
`NAME`	Name of the VPN routing/forwarding instance

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip msdp mesh-group mg-1 192.168.1.26
```

ip msdp originator-id

Use this command to allow a Multicast Source Discovery Protocol (MSDP) speaker that originates a Source-Active (SA) message to use the IP address of an interface as a rendezvous point (RP) address in the SA message.

By default, ZebOS-XP uses the RP address of the device.

Use the `no` option with this command to use the RP address of the device in SA messages.

Command Syntax

```
ip msdp originator-id IFNAME
ip msdp (vrf NAME|) originator-id IFNAME
no ip msdp originator-id IFNAME
no ip msdp (vrf NAME|) originator-id IFNAME
```

Parameters

`IFNAME`	Use the IP address of this interface as an RP address in SA messages
`NAME`	Name of the VPN routing/forwarding instance

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip msdp originator-id eth2
```

ip msdp password

Use this command to set an MD5-shared password key used for authenticating a Multicast Source Discovery Protocol (MSDP) peer. By default, no MD5 password is enabled.

Use the `no` option with this command to remove a password.

Command Syntax

```
ip msdp password WORD peer A.B.C.D
ip msdp (vrf NAME|) password WORD peer A.B.C.D
no ip msdp password WORD peer A.B.C.D
no ip msdp (vrf NAME|) password WORD peer A.B.C.D
```

Parameters

`WORD`	Password
`A.B.C.D`	IPv4 address of peer
`NAME`	Name of the VPN routing/forwarding instance

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip msdp password S#m*u104!! peer 192.168.1.26
```

ip msdp peer

Use this command to configure an Multicast Source Discovery Protocol (MSDP) peer relationship.

Use the `no` option with this command to remove a peer relationship.

Command Syntax

```
ip msdp peer A.B.C.D ((connect-source (IFNAME))|)
ip msdp (vrf NAME|) peer A.B.C.D ((connect-source (IFNAME))|)
no ip msdp peer A.B.C.D
no ip msdp (vrf NAME|) peer A.B.C.D
```

Parameters

`A.B.C.D`	IPv4 address of peer
`IFNAME`	Use the primary address of this interface for the TCP connection with the peer
`NAME`	Name of the VPN routing/forwarding instance

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip msdp peer 192.168.1.26 connect-source eth2
```

ip pim accept-register

Use this command to configure the ability to filter out multicast sources specified by the given access-list at the RP, so that the RP will accept/refuse to perform the Register mechanism for the packets sent by the specified sources. By default, the RP accepts Register packets from all multicast sources.

Use the no option with this command to revert to default.

Command Syntax

```
ip pim accept-register list (<100-199>|<2000-2699>|WORD)
ip pim (vrf NAME|) accept-register list (<100-199>|<2000-2699>|WORD)
no ip pim accept-register
no ip pim (vrf NAME|) accept-register
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
<100-199>	An IP extended access-list value
<2000-2699>	An IP extended access-list value in the expanded range
WORD	Name of a standard access list

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip pim accept-register list 121

(config)#no ip pim accept-register
```

ip pim anycast-rp

Use this command to configure the Anycast RP in the RP set.

Use the no option with this command to remove the configuration.

Command Syntax

```
ip pim anycast-rp A.B.C.D A.B.C.D
ip pim (vrf NAME|) anycast-rp A.B.C.D A.B.C.D
no ip pim anycast-rp A.B.C.D
no ip pim anycast-rp A.B.C.D A.B.C.D
no ip pim (vrf NAME|) anycast-rp A.B.C.D
no ip pim (vrf NAME|) anycast-rp A.B.C.D A.B.C.D
```

Parameters

`vrf`	The VPN routing/forwarding instance.
`NAME`	Specify the name of the VPN routing/forwarding instance.
`A.B.C.D`	Unicast IP address of the Anycast RP set. An Anycast RP set is a collection of RPs in the same domain.
`A.B.C.D`	Destination IP address where Register messages are copied and sent. A Member RP is an individual RP member in the Anycast RP set.

Command Mode

Configure mode

Examples

The following example shows how to configure the Anycast RP in the RP set.

```
#configure terminal
(config)#ip pim anycast-rp 1.1.1.1 10.10.10.10
```

The following example shows how to remove the configuration.

```
#configure terminal
(config)#no ip pim anycast-rp 1.1.1.1 10.10.10.10
```

ip pim bidir-enable

Use this command to enable Bidirectional PIM.

Use the `no` option with this command to disable Bidirectional PIM.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ip pim bidir-enable
```

```
no ip pim bidir-enable
```

Parameters

None

Command Mode

Global mode

Examples

```
#configure terminal
(config)#ip pim bidir-enable
```

```
#configure terminal
(config)#no ip pim bidir-enable
```

ip pim bidir-neighbor-filter

Use this command to configure an access list (ACL) to specify the bidirectionally capable neighbors that participate in the designated forwarder (DF) election.

Use the `no` command to allow all neighbors to participate in DF election.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ip pim bidir-neighbor-filter (<1-99>|WORD)
no ip pim bidir-neighbor-filter
```

Parameters

`<1-99>`	IP standard access-list
`WORD`	IP named standard access list

Command Mode

Interface Configure mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim bidir-neighbor-filter 14
(config-if)#exit
(config)#ip access-list deny 192.168.1.53
(config)#ip access-list permit any
```

ip pim bidir-offer-interval

Use this command to configure the designated forwarder (DF) election offer message interval time.

Use the `no` command to revert back the offer interval period to the default value

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ip pim bidir-offer-interval <1-20000> (msec|)
no ip pim bidir-offer-interval
```

Parameters

`<1-2000>`	Specify interval time in seconds
`msec`	Specify interval time in milliseconds

Command Default

The default value for interval time is 100 ms.

Command Mode

Global mode

Examples

```
#configure terminal
(config)#ip pim bidir-offer-interval 123 msec

(config)#no ip pim bidir-offer-interval
```

ip pim bidir-offer-limit

Use this command to configure the bidirectionally capable number of unanswered offers before the device changes to the designated forwarder (DF).

Use the `no` command to remove the offer limit.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ip pim bidir-offer-limit <4-100>
no ip pim bidir-offer-limit
```

Parameters

`<4-100>`	Specify the limit of unanswered offers.

Command Default

The default value is three unanswered offers.

Command Mode

Global mode

Examples

```
#configure terminal
(config)#ip pim bidir-offer-limit 50

(config)#no ip pim bidir-offer-limit
```

ip pim bind ecmp-bundle

Use this command to bind interfaces to an ECMP Bundles.

Use the `no` option with this command to unbind the interfaces from an ECMP Bundles.

Command Syntax

```
ip pim bind ecmp-bundle WORD
no ip pim bind ecmp-bundle WORD
```

Parameter

`WORD`	ECMP bundle name

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ip pim bind ecmp-bundle ebund1

(config-if)#no ip pim bind ecmp-bundle ebund1
```

ip pim bsr-border

Use this command to prevent bootstrap router (BSR) messages from being sent or received through an interface.

When this command is configured on an interface, no PIM Version 2 BSR messages are sent or received through the interface. Use this command to configure an interface bordering another PIM domain to avoid the exchange of BSR messages between the two domains. BSR messages should not be exchanged between different domains, because routers in one domain may elect rendezvous points (RPs) in the other domain, resulting in a protocol malfunction or loss of isolation between the domains.

Note: This command does not set up multicast boundaries. It only sets up a PIM domain BSR message border.

Use the `no` option with this command to remove the BSR border configuration.

Command Syntax

```
ip pim bsr-border
no ip pim bsr-border
```

Parameters

None

Default

Bootstrap router border configuration is disabled by default.

Command Mode

Interface mode

Examples

The following example configures the interface to be the PIM domain border:

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim bsr-border

(config)#interface eth0
(config-if)#no ip pim bsr-border
```

ip pim bsr-candidate

Use this command to give the router the candidate BSR status using the specified IP address of the interface.

Use the `no` option with this command to disable this function.

Command Syntax

```
ip pim bsr-candidate IFNAME
ip pim bsr-candidate IFNAME <0-32>
ip pim bsr-candidate IFNAME <0-32> <0-255>
ip pim (vrf NAME|) bsr-candidate IFNAME
ip pim (vrf NAME|) bsr-candidate IFNAME <0-32>
ip pim (vrf NAME|) bsr-candidate IFNAME <0-32> <0-255>
no ip pim bsr-candidate (IFNAME|)
no ip pim (vrf NAME|) bsr-candidate (IFNAME|)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`IFNAME`	Specify the name of the interface
`<0-32>`	Specify a hash mask length for RP selection
`<0-255>`	Specify a priority for a BSR candidate

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip pim bsr-candidate eth0 20 30
```

ip pim cisco-register-checksum

Use this command to configure the option to calculate the register checksum over the whole packet. This command is used to inter-operate with older Cisco IOS versions.

Use the no option with this command to revert to the default settings.

Command Syntax

```
ip pim cisco-register-checksum
ip pim cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
ip pim (vrf NAME|) cisco-register-checksum
ip pim (vrf NAME|) cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
no ip pim cisco-register-checksum
no ip pim cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
no ip pim (vrf NAME|) cisco-register-checksum
no ip pim (vrf NAME|) cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
```

Parameters

`vrf`	The VPN routing/forwarding instance.
`NAME`	Specify the name of the VPN routing/forwarding instance.
`group-list`	Use this parameter to configure the option to calculate the register checksum over the whole packet on multicast groups specified by the access-list.
`<1-99>`	Specify an IP standard access-list.
`<1300-1999>`	Specify an IP access-list (expanded range).
`WORD`	IP named standard access list.

Default

This command is disabled by default. By default, Register Checksum is calculated only over the header.

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ip pim cisco-register-checksum

#configure terminal
(config)#ip pim cisco-register-checksum group-list 34
(config)#ip access-list 34 permit 224.0.1.3
```

ip pim

Use this command to enable PIM dense-mode or sparse-mode or sparse-dense-mode on the current interface.

Use the `no` option with this command to disable PIM dense-mode or sparse-mode or sparse-dense-mode on the interface.

Command Syntax

```
ip pim (dense-mode|sparse-mode|sparse-dense-mode)
no ip pim (dense-mode|sparse-mode|sparse-dense-mode)
```

Parameters

`dense-mode`	Enable PIM dense-mode operation
`sparse-mode`	Enable PIM sparse-mode
`sparse-dense mode`	Enable PIM sparse-dense-mode

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim dense-mode

(config)#interface eth0
(config-if)#no ip pim dense-mode

(config)#interface eth0
(config-if)#ip pim sparse-dense-mode

(config-if)#no ip pim sparse-dense-mode
```

ip pim passive

Use this command to enable or disable passive mode operation for local members on the interface. Passive mode essentially stops PIM transactions on the interface, allowing only the Internet Group Management Protocol (IGMP) mechanism to be active.

Use the `no` option with this command to disable the passive mode.

Command Syntax

```
ip pim (dense-mode|sparse-mode) passive
no ip pim (dense-mode|sparse-mode) passive
```

Parameters

`dense-mode`	Enable passive operation for PIM dense-mode
`sparse-mode`	Enable passive operation for PIM sparse-mode

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim dense-mode passive

(config)#interface eth0
(config-if)#no ip pim dense-mode passive

#configure terminal
(config)#interface eth0
(config-if)#ip pim sparse-mode passive

(config)#interface eth0
(config-if)#no ip pim sparse-mode passive
```

ip pim dense-group

Use this command to force a particular group to always follow dense mode irrespective of whether RP mapping is available or not in SM-DM mode.

Use the `no` option with this command to delete the group-address and follow SM-DM rules.

Command Syntax

ip pim dense-group A.B.C.D

```
ip pim (vrf NAME|) dense-group A.B.C.D
no ip pim (vrf NAME|) dense-group A.B.C.D
no ip pim dense-group A.B.C.D
```

Parameter

`A.B.C.D`	Specify IP address
`vrf`	virtual-router forwarding
`NAME`	Specify the name of the VRF

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ip pim dense-group 1.1.1.1

(config-if)# no ip pim dense-group 1.1.1.1
```

ip pim dr-priority

Use this command to set the designated router's priority value.

Use the `no` option with this command to remove the priority from the DR.

Command Syntax

```
ip pim dr-priority <0-4294967294>
no ip pim dr-priority (<0-4294967294>|)
```

Parameter

`<0-4294967294>` Valid range of values for DR priority, with a higher value resulting in a higher preference

Default

The default DR priority value is 1.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim dr-priority 11234

(config)#interface eth0
(config-if)#no ip pim dr-priority 11234
```

ip pim ecmp-bundle

Use this command to create an ECMP bundle

Use the `no` option with this command to delete an ECMP bundle

Command Syntax

```
ip pim ecmp-bundle WORD
ip pim (vrf NAME|) ecmp-bundle WORD
ip pim ecmp-bundle WORD
no ip pim (vrf NAME|) ecmp-bundle WORD
```

Parameter

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`WORD`	ECMP bundle name

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim exmp-bundle ebund1

(config)#no ip pim ecmp-bundle ebund1
```

ip pim exclude-genid

Use this command to exclude the GenID (generated ID) option from Hello packets sent by the PIM module on an interface. This command is used to inter-operate with older Cisco IOS versions.

Use the `no` option with this command to restore PIM to its default setting.

Command Syntax

```
ip pim exclude-genid
no ip pim exclude-genid
```

Parameters

None

Command Mode

Interface mode

Default

By default, this command is disabled; that is, the GenID option is included.

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim exclude-genid

(config)#interface eth0
(config-if)#no ip pim exclude-genid
```

ip pim hello-holdtime

Use this command to configure a hello holdtime other than the default (`3.5 * hello_interval` seconds).

When configuring `hello-holdtime`, if the configured value is less than the current `hello_interval`, it is refused.

When removing a configured `hello_holdtime`, the value is reset to (`3.5 *` current `hello_interval)` value.

Every time the hello_interval is updated, the hello-holdtime is also updated according to rules below:

If the hello_holdtime is not configured, or if the hello_holdtime is configured, but is less than the current hello_interval value, it is modified to (3.5 * hello_interval). Otherwise, the configured value is maintained.

Use the `no` option with this command to remove the configured hello-holdtime.

Command Syntax

```
ip pim hello-holdtime <1-65535>
no ip pim hello-holdtime
```

Parameter

`<1-65535>`	Range of values for hello-holdtime, in seconds

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim hello-holdtime 123

(config)#interface eth0
(config-if)#no ip pim hello-holdtime
```

ip pim hello-interval

Use this command to configure a hello interval value other than the default. When a hello-interval is configured and hello-holdtime is not configured, or when the hello-holdtime value configured is less than the new hello-interval value, the holdtime value is modified to (3.5 * hello_interval). Otherwise, the hello-holdtime value is the configured value.

Use the `no` option with this command to reset the hello-interval to its default value.

Command Syntax

```
ip pim hello-interval <1-65535>
no ip pim hello-interval
```

Parameter

`<1-65535>`	Range of values for the hello-interval. No fractional values are allowed.

Default

The default value for hello-interval is 30 seconds.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim hello-interval 123

(config)#interface eth0
(config-if)#no ip pim hello-interval
```

ip pim ignore-rp-set-priority

Use this command to ignore the RP-SET priority value, and use only the hashing mechanism for RP selection. This command is used to inter-operate with older Cisco IOS versions.

Use the `no` option with this command to remove this setting.

Command Syntax

```
ip pim ignore-rp-set-priority
ip pim (vrf NAME|) ignore-rp-set-priority
no ip pim ignore-rp-set-priority
no ip pim (vrf NAME|) ignore-rp-set-priority
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim ignore-rp-set-priority

#configure terminal
(config)#no ip pim ignore-rp-set-priority
```

ip pim jp-timer

Use this command to set a PIM join/prune timer.

Use the `no` option with this command to remove the join/prune timer.

Command Syntax

```
ip pim jp-timer <1-65535>
ip pim (vrf NAME|) jp-timer <1-65535>
no ip pim jp-timer
no ip pim jp-timer <1-65535>
no ip pim (vrf NAME|) jp-timer
no ip pim (vrf NAME|) jp-timer <1-65535>
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`<1-65535>`	Range of values for the Join/Prune timer, in seconds

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim jp-timer 234

#configure terminal
(config)#no ip pim jp-timer 234
```

ip pim neighbor-filter

Use this command to enable filtering of neighbors on the interface. When configuring a neighbor filter, PIM either not establish adjacency with neighbor or terminates adjacency with existing neighbors, when denied by filtering access list.

Use the `no` option with this command to disable filtering of neighbors on the interface.

Command Syntax

```
ip pim neighbor-filter (<1-99>|WORD)
no ip pim neighbor-filter (<1-99>|WORD)
```

Parameters

`<1-99>`	An IP standard access-list number
`WORD`	Name of an IP standard access list

Command Mode

Interface mode

Default

This command is disabled; by default, there is no filtering.

Example

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim neighbor-filter 14
(config-if)#exit
(config)#ip access-list deny 192.168.1.53
(config)#ip access-list permit any
```

ip pim propagation-delay

Use this command to configure a propagation delay value for PIM.

Use the no option with this command to return the propagation delay to its default value.

Command Syntax

```
ip pim propagation-delay <1000-5000>
no ip pim propagation-delay
```

Parameter

<1000-5000>	Range of values for propagation delay, in milliseconds

Default

The default propagation delay is 500 milliseconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim propagation-delay 1000

(config)#interface eth0
(config-if)#no ip pim propagation-delay
```

ip pim register-rate-limit

Use this command to configure the rate of Register packets sent by this designated router (DR), in number of packets per second.

Use the no option to remove the register-rate-limit configuration.

Note: The configured rate is per (S,G) state, and is not a system-wide rate.

Command Syntax

```
ip pim register-rate-limit <1-65535>
ip pim (vrf NAME|) register-rate-limit <1-65535>
no ip pim register-rate-limit
no ip pim (vrf NAME|) register-rate-limit
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
<1-65535>	Range of values for packets to send per second

Command mode

Configure mode

Example

```
#configure terminal
(config)#ip pim register-rate-limit 3444

#configure terminal
(config)#no ip pim register-rate-limit
```

ip pim register-rp-reachability

Use this command to enable the RP reachability check for PIM Registers at the DR.

Use the no option to reset to the default state.

Command Syntax

```
ip pim register-rp-reachability
ip pim (vrf NAME|) register-rp-reachability
no ip pim register-rp-reachability
no ip pim (vrf NAME|) register-rp-reachability
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Configure mode

Default

The default setting is no checking for rendezvous point reachability,

Example

```
#configure terminal
(config)#ip pim register-rp-reachability
```

ip pim register-source

Use this command to configure the source address of Register packets sent by this DR, overriding the default source address, which is the address of the RPF interface toward the source host.

Use the `no` option to remove the source address of register packets sent by this DR, and reset it to use the default source address, that is, the address of the RPF interface toward the source host.

The configured address must be a reachable address so the RP can send corresponding Register-Stop messages in response. This address is usually the loopback interface address, but can also be other physical addresses. The address must be advertised by unicast routing protocols on the DR.

Note: The interface configured does not require PIM to be enabled.

Command Syntax

```
ip pim register-source A.B.C.D
ip pim register-source IFNAME
ip pim (vrf NAME|) register-source A.B.C.D
ip pim (vrf NAME|) register-source IFNAME
no ip pim register-source
no ip pim (vrf NAME|) register-source
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`A.B.C.D`	The IP address to use as the source of the register packets
`IFNAME`	The name of the interface to use as the source of the register packets

Command mode

Configure mode

Example

```
#configure terminal
(config)#ip pim register-source 3.3.3.2
```

ip pim register-suppression

Use this command to configure the register-suppression time, in seconds, overriding the default value of 60 seconds. Configuring this value modifies register-suppression time at the DR; configuring this value at the RP modifies the RP-keepalive-period value if the `ip pim rp-register-kat` command is not used.

Use the no option to remove the register-suppression setting.

Command Syntax

```
ip pim register-suppression <1-65535>
ip pim (vrf NAME|) register-suppression <1-65535>
no ip pim register-suppression
no ip pim (vrf NAME|) register-suppression
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`<1-65535>`	Range of values for register suppression time in seconds

Command mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim register-suppression 555

#configure terminal
(config)#no ip pim register-suppression
```

ip pim router-id

Use this command to configure PIM router-ID to uniquely identify the router.By default, PIM registers for the NSM router-id service. This command will override the router-id received from NSM.

Use the `no` option with this command to unconfigure PIM router-ID. This will make PIM fall back to the NSM router-id

Command Syntax

```
ip pim (vrf NAME|) router-id A.B.C.D
no ip pim (vrf NAME|) router-id A.B.C.D
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`A.B.C.D`	Specify the Router ID

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim router-id 1.1.1.1

(config)#no ip pim router-id 1.1.1.1
```

ip pim rp-address

Use this command to statically configure Rendezvous Point (RP) address for multicast groups.

Use the `no` option to remove the RP address.

ZebOS-XP PIM supports multiple static RPs. It also supports static-RP and Bootsrtrap Router (BSR) mechanism simultaneously. The following list states the correct usage of this command:

- If RP-address configured through BSR and RP-address configured statically are both available for a group range, the RP-address configured through BSR is chosen over statically configured RP-address.
- One static-RP can be configured for multiple group ranges using Access Lists. However, configuring multiple static RPs (using `ip pim rp-address` command) with the same RP address is not allowed. The static-RP can either be configured for the whole multicast group range `224/4` (without ACL) or for specific group ranges (using ACL). For example, configuring `ip pim rp-address 1.2.3.4` will configure static-RP 1.2.3.4 for the default group range `224/4`. Configuring `ip pim rp-address 5.6.7.8 grp-list` will configure static-RP `5.6.7.8` for all the group ranges represented by `Permit` filters in `grp-list` ACL.
- If multiple static-RPs are available for a group range, then one with the highest IP address is chosen.
- Only `permit` filters in ACL are considered as valid group ranges. The default `Permit` filter `0.0.0.0/0` is converted to default multicast filter `224/4`.
- When selecting static-RPs for a group range, the first element, with the static-RP with highest IP address, is chosen.
- Group mode and RP address mappings learned through BSR take precedence over mappings statistically defined by the `ip pim rp-address` command without the `override` keyword. Commands with the `override` keyword take precedence over dynamically learned mappings.

Command Syntax

```
ip pim rp-address A.B.C.D (bidir|)(override|)
ip pim rp-address A.B.C.D (<1-99>|<1300-1999>|WORD) (bidir|)(override|)
ip pim (vrf NAME|) rp-address A.B.C.D (bidir|)(override|)
ip pim (vrf NAME|) rp-address A.B.C.D (<1-99>|<1300-1999>|WORD)(bidir|) (override|)
no ip pim rp-address A.B.C.D (bidir|)
no ip pim rp-address A.B.C.D (<1-99>|<1300-1999>|WORD) (bidir|)
no ip pim (vrf NAME|) rp-address A.B.C.D
no ip pim (vrf NAME|) rp-address A.B.C.D (<1-99>|<1300-1999>|WORD)(bidir|)
```

Parameters

`bidir`	Bidirectional RP address
`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`<1-99>`	IP Standard access-list
`<1300-1999>`	IP Standard access-list (expanded range)
`WORD`	Access-list name
`override`	Static RP overrides dynamically-learned RP

Command Mode

Configure mode

Example

```
(config)#ip pim rp-address 3.3.3.3 4
```

ip pim rp-candidate

Use this command to give the router a candidate RP status using the IP address of the specified interface.

Additionally, `bidir` indicates that the multicast groups specified by the `group-list` argument are to operate in bidirectional mode. If the command is configured without this option, the groups specified will operate in PIM sparse mode; group-list specifies the standard IP access list number or name that defines the group prefixes that are advertised in association with the RP address.

Use the `no` option along with this command to remove the settings.

Command Syntax

```
ip pim (vrf NAME|) rp-candidate IFNAME (bidir|) ((group-list (<1-99>|WORD))|)
  (interval <1-16383>|) (priority <0-255>|)
no ip pim (vrf NAME|) rp-candidate (IFNAME|)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`IFNAME`	Specify an interface name
`bidir`	Bidirectional mode
`<1-99>`	An IP Standard access-list
`WORD`	A named standard access list
`<0-16383>`	Range of values for candidate-RP advertisement interval, in seconds
`<0-255>`	Range of values for priority of an RP candidate

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim rp-candidate eth0

(config)#no ip pim rp-candidate eth0
```

ip pim rp-register-kat

Use this command to configure a Keepalive Timer (KAT) value for (S,G) states at RP to monitor PIM register packets, overriding the generic KAT timer value.

Use the no option to remove this configuration.

Command Syntax

```
ip pim rp-register-kat <1-65535>
ip pim (vrf NAME|) rp-register-kat <1-65535>
no ip pim rp-register-kat
no ip pim (vrf NAME|) rp-register-kat
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
<1-65535>	Range of values for a KAT time in seconds

Command mode

Configure mode

Example

```
#configure terminal
(config)#ip pim rp-register-kat 3454

(config)#no ip pim rp-register-kat
```

ip pim spt-threshold

Use this command to turn on the ability of the last-hop PIM router to switch to SPT.

Use the `no` option with this command to turn off the ability of the last-hop PIM router to switch to SPT.

Note: This option is binary, meaning that the switching to SPT happens either at the receiving of the first data packet or not at all. It is not rate-based.

Command Syntax

```
ip pim spt-threshold
ip pim spt-threshold group-list (<1-99>|<1300-1999>|WORD)
ip pim (vrf NAME|) spt-threshold
ip pim (vrf NAME|) spt-threshold group-list (<1-99>|<1300-1999>|WORD)
no ip pim (vrf NAME|) spt-threshold
no ip pim (vrf NAME|) spt-threshold group-list (<1-99>|<1300-1999>|WORD)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`group-list`	Enable the ability for the last-hop PIM router to switch to SPT for multicast group addresses indicated by the given access-list
`<1-99>`	An IP Standard access-list
`<1300-1999>`	An IP Standard access-list (expanded range)
`WORD`	A named standard access list

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ip pim spt-threshold

#configure terminal
(config)#ip pim spt-threshold group-list LIST1
(config)#ip access-list permit 224.0.1.3

#configure terminal
(config)#no ip pim spt-threshold
```

ip pim ssm

Use this command to configure Source Specific Multicast (SSM), and define the) range of IP multicast addresses. The keyword `default` defines the SSM range as 232/8. To define the SSM range to be other than the default, define and access-list.

When an SSM range of IP multicast addresses is defined with the `ip pim ssm` command, the no (*,G) or (S,G,rpt) state is initiated for groups in the SSM range.

The messages corresponding to these states are no accepted or originated in the SSM range.

Use the `no` form of this command to disable the SSM range.

Command Syntax

```
ip pim ssm default
ip pim ssm range (<1-99>|WORD)
ip pim (vrf NAME|) ssm default
ip pim (vrf NAME|) ssm range (<1-99>|WORD)
no ip pim ssm
no ip pim (vrf NAME|) ssm
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`default`	This keyword defines the 232/8 group range for SSM
`range`	Define an access-list for group range to use for SSM
`<1-99>`	Range of values for a standard access-list
`WORD`	A named standard access list

Command Mode

Configure mode

Example

The following example shows how to configure SSM service for the IP address range defined by access list 10:

```
#configure terminal
(config)#access-list 10 permit 225.1.1.1
(config)#ip pim ssm range 4
```

ip pim state-refresh origination-interval

Use this command to configure a PIM-DM State-Refresh origination interval other than the default value.). The origination interval is the number of seconds between PIM-DM State Refresh control messages.

Use the `no` option with this command to return the origination interval to its default value.

Command Syntax

```
ip pim state-refresh origination-interval <1-100>
no ip pim state-refresh origination-interval
```

Parameter

`<1-100>`	Range of values for state-refresh origination interval, in seconds

Note: No fractional values are allowed for the interval time.

Default

The default state-refresh origination interval is 60 seconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim state-refresh origination-interval 65

(config)#interface eth0
(config-if)#no ip pim state-refresh origination-interval
```

ip pim unicast-bsm

Use this command to enable support for sending and receiving unicast Bootstrap Messages (BSM) on an interface. This command supports backward-compatibility with older versions of the Bootstrap Router specification, which specifies unicast BSM to refresh the state of new or restarting neighbors.

Use the `no` option with this command to disable unicast bootstrap messaging on an interface.

Command Syntax

```
ip pim unicast-bsm
no ip pim unicast-bsm
```

Parameters

None

Default

Unicast bootstrap messaging is disabled by default.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ip pim unicast-bsm

(config)#interface eth0
(config-if)#no ip pim unicast-bsm
```

show debugging ip pim

Use this command to display the debug status for the PIM process.

Command Syntax

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

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec mode

Examples

```
# show debugging ip pim
```

show debugging pim

Use this command to display the status of debugging for PIM.

Command Syntax

```
show debugging pim
```

Parameters

None

Command Mode

Privileged Exec and Exec mode

Example

This command displays one of several status:

```
#show debugging pim
```

show ip msdp peer

Use this command to display information about a Multicast Source Discovery Protocol (MSDP) peer.

Command Syntax

```
show ip msdp peer (A.B.C.D|)
show ip msdp (vrf NAME|) peer (A.B.C.D|)
```

Parameters

A.B.C.D	IPv4 address of peer
NAME	Name of the VPN routing/forwarding instance

Command Mode

Privileged Exec and Exec mode

Example

```
#show ip msdp peer 192.168.1.26
```

show ip msdp sa-cache

Use this command to display the (S,G) state learned from Multicast Source Discovery Protocol (MSDP) peers.

You can specify zero, one, or two addresses:

- If you do not specify any address, the entire Source-Active (SA) cache is displayed.
- If you specify only a unicast address it is treated as a source; if you specify only a multicast address it is treated as a group. In either case, entries corresponding to that address are displayed.
- If you specify two addresses, an (S, G) entry corresponding to those addresses is displayed; one address must be unicast and the other address must be multicast.

Command Syntax

```
show ip msdp sa-cache
show ip msdp sa-cache A.B.C.D
show ip msdp sa-cache A.B.C.D A.B.C.D
show ip msdp (vrf NAME|) sa-cache
show ip msdp (vrf NAME|) sa-cache A.B.C.D
show ip msdp (vrf NAME|) sa-cache A.B.C.D A.B.C.D
```

Parameters

`A.B.C.D`	Source and/or group IP address
`NAME`	Name of the VPN routing/forwarding instance

Command Mode

Privileged Exec and Exec mode

Example

```
#show ip msdp sa-cache
```

show ip pim ecmp-bundle

Use this command to display the ECMP bundle information.

Command Syntax

```
show ip pim (vrf NAME|) ecmp-bundle (WORD|)
show ip pim ecmp-bundle (WORD|)
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
WORD	ECMP Bundle name

Command Mode

Privileged Exec mode

Examples

```
# show ip pim ecmp-bundle
Name        : ecmpbundle
Interface   : <ECMP REDIRECT status>
       eth2 : allowed
       eth3 : allowed
```

show ip pim interface

Use this command to display PIM interface information.

Command Syntax

```
show ip pim interface
show ip pim interface detail
```

Note: The below CLI is not supported for ZebIC releases.

```
show ip pim interface (IFNAME|) df (A.B.C.D|)
```

Note: For ZebIC releases, the below CLIs are supported only in Agema and Trident 2.

```
show ip pim (vrf NAME|) interface
show ip pim (vrf NAME|) interface detail
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`detail`	Display detailed information about a PIM interface
`df`	Display the IP address of the elected designated forwarder (DF)
`A.B.C.D`	Display the rendezvous point (RP) IP address.

Command Mode

Exec mode and Privileged Exec mode

Examples

```
Router# show ip pim interface df

Interface          RP               DF Winner        Metric
eth1               10.10.0.2        10.4.0.2         0
                   10.10.0.3        10.4.0.3         0
                   10.10.0.5        10.4.0.4         409600
eth2               10.10.0.2        10.5.0.2         0


Router# show ip pim interface eth1 df 10.10.0.3

Designated Forwarder election for eth1, 10.4.0.2, RP 10.10.0.3
  State                          Non-DF
  Offer count is                 0
  Current DF ip address          10.4.0.3
  Last winner metric preference  0
  Last winner metric             0

localhost.localdomain#show ip pim interface
Address          Interface VIFindex Ver/   Nbr    DR         DR
                                    Mode   Count  Prior
1.1.1.1          eth1      0        v2/SD   0      1          1.1.1.1
2.2.2.2          eth2      2        v2/S   0      1          2.2.2.2
```

```
4.4.4.4          eth3      3        v2/D   0      1
localhost.localdomain#
```

The output for PIM ECMP Redirect is as below:

```
rtr6#show  ip pim  interface detail
eth1 (vif 0):
  Address 192.168.10.57, DR 192.168.10.57
  Hello period 30 seconds, Next Hello in 18 seconds
  Triggered Hello period 5 seconds
  Propagation delay is 1000 milli-seconds
  Interface ID: Router-ID:1.1.1.57 Local-ID 3
  Neighbors:
   192.168.10.52

eth2 (vif 2):
  Address 192.168.1.57, DR 192.168.1.152
  Hello period 30 seconds, Next Hello in 20 seconds
  Triggered Hello period 5 seconds
  Propagation delay is 1000 milli-seconds
  Interface ID: Router-ID:1.1.1.57 Local-ID 4
  ECMP REDIRECT, bundle : ecmpbundle, status :  allowed
  Neighbors:
   192.168.1.149
   192.168.1.150
   192.168.1.152
```

show ip pim mroute

Use this command to display information in the IP PIM multicast routing table.

Command Syntax

```
show ip pim mroute (detail|)
show ip pim mroute A.B.C.D (detail|)
show ip pim mroute A.B.C.D A.B.C.D (detail|)
show ip pim (vrf NAME|) mroute (detail|)
show ip pim (vrf NAME|) mroute A.B.C.D (detail|)
show ip pim (vrf NAME|) mroute A.B.C.D A.B.C.D (detail|)
```

Parameter

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`A.B.C.D`	Display all entries for this group IP address
`A.B.C.D`	Display all entries for this source IP address

Note: A group IP address and a source IP address cannot be simultaneously

`detail`	Display detailed PIM multicast routing table information

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show ip pim mroute
```

show ip pim neighbor

Use this command to display PIM neighbor information.

Command Syntax

```
show ip pim neighbor (detail|)
show ip pim neighbor IFNAME (detail|)
show ip pim neighbor IFNAME A.B.C.D (detail|)
show ip pim (vrf NAME|) neighbor (detail|)
show ip pim (vrf NAME|) neighbor IFNAME (detail|)
show ip pim (vrf NAME|) neighbor IFNAME A.B.C.D (detail|)
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
IFNAME	Name of the interface
A.B.C.D	IPv4 address of the neighbor interface
detail	Display detailed information for a PIM neighbor

Command Mode

Exec mode and Privileged Exec mode

Examples

```
>#show ip pim neighbor
PIM Neighbor Status for VRF "Default"
Neighbor        Interface          Uptime/Expires            Ver     DR
Address
Priority/Mode
60.60.60.1      Vlan6              00:09:24/00:00:59
```

The validation command to view PIM ECMP Redirect is as below:

```
rtr6#show  ip pim  neighbor detail
Nbr 192.168.10.52 (eth1)
Expires in 83 seconds, uptime 00:21:52
Holdtime: 105 secs, T-bit: off, Lan delay: 1, Override interval: 3
DR priority: 1, Gen ID: 1048865461,

Nbr 192.168.1.149 (eth2)
Expires in 99 seconds, uptime 00:22:06
Holdtime: 105 secs, T-bit: off, Lan delay: 1, Override interval: 3
DR priority: 1, Gen ID: 2102076842,
Interface ID: Router-ID: 1.1.1.149 Local-ID: 4,
ECMP REDIRECT enabled

Nbr 192.168.1.150 (eth2)
Expires in 77 seconds, uptime 00:22:02
```

```
Holdtime: 105 secs, T-bit: off, Lan delay: 1, Override interval: 3
DR priority: 1, Gen ID: 1306457151,
Interface ID: Router-ID: 1.1.1.153 Local-ID: 4,
ECMP REDIRECT enabled

Nbr 192.168.1.152 (eth2), DR
Expires in 86 seconds, uptime 00:22:06
Holdtime: 105 secs, T-bit: off, Lan delay: 1, Override interval: 3
DR priority: 1, Gen ID: 170629600,
Interface ID: Router-ID: 1.1.1.152 Local-ID: 4,
ECMP REDIRECT enabled
```

show ip pim nexthop

Displays the nexthop information from NSM as used by PIM.

Command Syntax

```
show ip pim nexthop
show ip pim (vrf NAME|) nexthop
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show ip pim nexthop
```

show ip pim bsr-router

Use this command to show the bootstrap router v2 address.

Command Syntax

```
show ip pim bsr-router
show ip pim (vrf NAME|) bsr-router
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec and Exec mode

Example

```
#show ip pim bsr-router
PIMv2 Bootstrap information
  BSR address: 10.10.11.35 (?)
  Uptime:      00:00:38, BSR Priority: 0, Hash mask length: 10
  Expires:     00:01:32
  Role: Non-candidate BSR
  State: Accept Preferred
```

show ip pim local-members

Use this command to display information about local membership for PIM interfaces.

Command Syntax

```
show ip pim local-members
show ip pim local-members IFNAME
show ip pim (vrf NAME|) local-members
show ip pim (vrf NAME|) local-members IFNAME
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`IFNAME`	Display neighbors for an interface name

Command Mode

Privileged Exec and Exec mode

Example

```
#show ip pim local-members
```

show ip pim rp-hash

Use this command to display the rendezvous point (RP) to chose based on the group selected.

Command Syntax

```
show ip pim rp-hash A.B.C.D
show ip pim (vrf NAME|) rp-hash A.B.C.D
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
A.B.C.D	Specify a group address

Command Mode

Privileged Exec mode and Exec mode

Example

A.B.C.D in command refers to the group address to be hashed.

```
#show ip pim rp-hash 224.0.1.3
```

show ip pim rp mapping

Use this command to show group-to-RP (rendezvous point) mappings, and the RP set.

Command Syntax

```
show ip pim rp mapping
show ip pim (vrf NAME|) rp mapping
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec mode and Exec mode

Example

```
>show ip pim rp mapping
```

snmp restart pim

Use this command to restart SNMP in (PIM).

Note: This command restarts both IPv4 and IPv6 PIM daemon

Command Syntax

```
snmp restart pim
```

Parameters

None

Command Mode

Configure mode

Examples

```
#snmp restart pim
```

undebug all ip pim

Use this command to disable all PIM debugging from Configure mode.

Command Syntax

```
undebug all ip pim
undebug (vrf NAME|) all ip pim
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec mode and Exec mode

Example

```
#undebug all ip pim
```

CHAPTER 3 PIMv6 Commands

This chapter describes the commands for Protocol-Independent Multicast (PIM).

clear ipv6 mroute

Use this command to delete all multicast route table entries and all multicast routes at the PIM protocol level.

Command Syntax

```
clear ipv6 mroute *
clear ipv6 mroute * pim (dense-mode|sparse-mode)
clear ipv6 mroute X:X::X:X
clear ipv6 mroute X:X::X:X X:X::X:X
clear ipv6 mroute X:X::X:X X:X::X:X pim (dense-mode|sparse-mode)
clear ipv6 mroute X:X::X:X pim sparse-mode
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 (vrf NAME|) *
clear ipv6 mroute (vrf NAME|) * pim (dense-mode|sparse-mode)
clear ipv6 mroute (vrf NAME|) X:X::X:X
clear ipv6 mroute (vrf NAME|) X:X::X:X X:X::X:X
clear ipv6 mroute (vrf NAME|) X:X::X:X X:X::X:X pim (dense-mode|sparse-mode)
clear ipv6 mroute (vrf NAME|) X:X::X:X pim sparse-mode
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|) * pim (dense-mode|sparse-mode)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`*`	Delete all multicast routes
`dense-mode`	Clear multicast rout table for PIM dense-mode
`sparse-mode`	Clear multicast route table for PIM sparse mode

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ipv6 mroute * pim sparse-mode
#clear ipv6 mroute 3ffe::24:3 ff00::3 pim sparse-mode
```

clear ipv6 pim sparse-mode bsr

Use this command to clear all rendezvous point (RP) sets learned through the PIMv2 Bootstrap Router (BSR).

Command Syntax

```
clear ipv6 pim sparse-mode bsr rp-set *
clear ipv6 pim (vrf NAME|) sparse-mode bsr rp-set *
```

Parameters

`rp-set`	PIMv2 bootstrap router RP set
`*`	Clear all RP sets
`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance

Command Mode

Exec mode and Privileged Exec mode

Example

```
#clear ipv6 pim sparse-mode bsr rp-set *
```

debug ipv6 pim

Use this command to enable debugging for PIM.

Use the `no` option with this command to deactivate debugging for PIM.

Command Syntax

```
debug ipv6 pim (all|events|mfc|mib|mtrace|nexthop|nsm|packet|state|timer)
debug ipv6 pim (vrf NAME|) (all|events|mfc|mib|mtrace|nexthop|nsm|packet|state
  |timer)
no debug ipv6 pim (all|events|mfc|mib|mtracenexthop|nsm|packet|state|timer)
no debug ipv6 pim (vrf NAME|) (all|events|mfc|mib|mtracenexthop|nsm|packet
  |state|timer)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`all`	Enable debugging for all PIM events
`events`	Enable debugging for general configuration, Virtual Routing (VR), and VRF context
`mfc`	Enable debugging for MFC updates
`mib`	Enable debugging for MIB entries
`mtrace`	Enable debugging for MTRACE messages
`nexthop`	Enable debugging for Reverse Path Forwarding (RPF) neighbor nexthop cache handling
`nsm`	Enable debugging for NSM
`packet`	Enable debugging for PIM packets
`state`	Enable debugging for PIM states
`timer`	Enable debugging for PIM timers

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Examples

```
#configure terminal
(config)#debug ipv6 pim state
```

debug ipv6 pim packet

Use this command to activate debugging of incoming or outgoing PIM packets.

Use the `no` option with this command to deactivate debugging of incoming or outgoing PIM packets.

Command Syntax

```
debug ipv6 pim packet
debug ipv6 pim packet in
debug ipv6 pim packet out
debug ipv6 pim (vrf NAME|) packet
debug ipv6 pim (vrf NAME|) packet in
debug ipv6 pim (vrf NAME|) packet out
no debug ipv6 pim packet
no debug ipv6 pim packet in
no debug ipv6 pim packet out
no debug ipv6 pim (vrf NAME|) packet
no debug ipv6 pim (vrf NAME|) packet in
no debug ipv6 pim (vrf NAME|) packet out
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`in`	Debug incoming packets
`out`	Debug outgoing packets

Command Mode

Configure and Privileged Exec modes

Example

```
#configure terminal
(config)#debug ipv6 pim packet in
```

debug ipv6 pim timer assert

Use this command to enable debugging of the PIM assert timers.

Use the `no` option with this command to disable debugging for PIM assert timers.

Command Syntax

```
debug ipv6 pim timer assert
debug ipv6 pim timer assert at
debug ipv6 pim (vrf NAME|) timer assert
debug ipv6 pim (vrf NAME|) timer assert at
no debug ipv6 pim timer assert
no debug ipv6 pim timer assert at
no debug ipv6 pim (vrf NAME|) timer assert
no debug ipv6 pim (vrf NAME|) timer assert at
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`at`	Use this option to turn on or turn off debugging of the PIM Assert Timer

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ipv6 pim timer assert at
```

debug ipv6 pim timer bsr

Use this command to enable debugging of the PIM BSR time.

Use the `no` option with this command to disable debugging of the PIM BSR timer.

Command Syntax

```
debug ipv6 pim timer bsr
debug ipv6 pim timer bsr bst
debug ipv6 pim timer bsr crp
debug ipv6 pim (vrf NAME|) timer bsr
debug ipv6 pim (vrf NAME|) timer bsr bst
debug ipv6 pim (vrf NAME|) timer bsr crp
no debug ipv6 pim timer bsr
no debug ipv6 pim timer bsr bst
no debug ipv6 pim timer bsr crp
no debug ipv6 pim (vrf NAME|) timer bsr
no debug ipv6 pim (vrf NAME|) timer bsr bst
no debug ipv6 pim (vrf NAME|) timer bsr crp
```

Parameters

`bst`	Turn on or turn off the bootstrap debugging timer
`crp`	Turn on or turn off the Candidate-RP debugging timer
`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#configure terminal
(config)#debug ipv6 pim timer bsr bst
```

debug ipv6 pim timer hello

Use this command to enable debugging of various PIM Hello timers.

Use the `no` option with this command to disable debugging of the PIM Hello timers.

Command Syntax

```
debug ipv6 pim timer hello
debug ipv6 pim timer hello ht
debug ipv6 pim timer hello nlt
debug ipv6 pim timer hello tht
debug ipv6 pim (vrf NAME|) timer hello
debug ipv6 pim (vrf NAME|) timer hello ht
debug ipv6 pim (vrf NAME|) timer hello nlt
debug ipv6 pim (vrf NAME|) timer hello tht
no debug ipv6 pim timer hello
no debug ipv6 pim timer hello ht
no debug ipv6 pim timer hello nlt
no debug ipv6 pim timer hello tht
no debug ipv6 pim (vrf NAME|) timer hello
no debug ipv6 pim (vrf NAME|) timer hello ht
no debug ipv6 pim (vrf NAME|) timer hello nlt
no debug ipv6 pim (vrf NAME|) timer hello tht
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`ht`	Turn on or turn off the PIM Hello debugging timer (ht)
`nlt`	Turn on or turn off the PIM Neighbor Liveliness debugging timer (nlt)
`tht`	Turn on or turn off the Triggered Hello Timer (tht)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#configure terminal
(config)#debug ipv6 pim timer hello ht
```

debug ipv6 pim timer joinprune

Use this command to enable debugging of various PIM JoinPrune timers.

Use the no option with this command to disable the debugging of the PIM JoinPrune timers.

Command Syntax

```
debug ipv6 pim timer joinprune
debug ipv6 pim timer joinprune et
debug ipv6 pim timer joinprune kat
debug ipv6 pim timer joinprune jt
debug ipv6 pim timer joinprune ot
debug ipv6 pim timer joinprune ppt
debug ipv6 pim (vrf NAME|) timer joinprune
debug ipv6 pim (vrf NAME|) timer joinprune et
debug ipv6 pim (vrf NAME|) timer joinprune kat
debug ipv6 pim (vrf NAME|) timer joinprune jt
debug ipv6 pim (vrf NAME|) timer joinprune ot
debug ipv6 pim (vrf NAME|) timer joinprune ppt
no debug ipv6 pim timer joinprune
no debug ipv6 pim timer joinprune et
no debug ipv6 pim timer joinprune kat
no debug ipv6 pim timer joinprune jt
no debug ipv6 pim timer joinprune ot
no debug ipv6 pim timer joinprune ppt
no debug ipv6 pim (vrf NAME|) timer joinprune
no debug ipv6 pim (vrf NAME|) timer joinprune et
no debug ipv6 pim (vrf NAME|) timer joinprune kat
no debug ipv6 pim (vrf NAME|) timer joinprune jt
no debug ipv6 pim (vrf NAME|) timer joinprune ot
no debug ipv6 pim (vrf NAME|) timer joinprune ppt
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`et`	Turn on or turn off the PIM JoinPrune expiry timer (et)
`jt`	Turn on or turn off the PIM JoinPrune upstream Join Timer (jt)
`kat`	Turn on or turn off the PIM JoinPrune Keep Alive timer (kat)

`ot`	Turn on or turn off the PIM JoinPrune Upstream Override Timer (ot)
`ppt`	Turn on or turn off the f PIM JoinPrune PrunePending Timer ((ppt)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ipv6 pim timer joinprune et
```

debug ipv6 pim timer register

Use this command to enable debugging of the PIM register timer.

Use the `no` option with this command to disable debugging of the PIM register timer.

Command Syntax

```
debug ipv6 pim timer register
debug ipv6 pim timer register rst
debug ipv6 pim (vrf NAME|) timer register
debug ipv6 pim (vrf NAME|) timer register rst
no debug ipv6 pim timer register
no debug ipv6 pim timer register rst
no debug ipv6 pim (vrf NAME|) timer register
no debug ipv6 pim (vrf NAME|) timer register rst
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`rst`	Turn on or turn off the PIM Register Stop Timer (rst)

Command Mode

Exec mode, Privilege Exec mode, and Configure mode

Example

```
#debug ipv6 pim timer register
```

ipv6 pim accept-register

Use this command to configure the ability to filter out multicast sources specified by the given access-list at the RP, so that the RP will accept/refuse to perform the Register mechanism for the packets sent by the specified sources. By default, the RP accepts Register packets from all multicast sources.

Use the no option with this command to revert to default.

Command Syntax

```
ipv6 pim accept-register list (<100-199>|<2000-2699>|WORD)
ipv6 pim (vrf NAME|) accept-register list (<100-199>|<2000-2699>|WORD)
no ipv6 pim accept-register
no ipv6 pim (vrf NAME|) accept-register
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
<100-199>	An IP extended access-list value
<2000-2699>	An IP extended access-list value in the expanded range
WORD	Name of a standard access list

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 pim accept-register list 121

(config)#no ipv6 pim accept-register
```

ipv6 pim anycast-rp

Use this command to configure an Anycast-RP in the RP set.

Use the no option with this command to remove the Anycast-RP configuration.

Command Syntax

```
ipv6 pim anycast-rp X:X::X:X X:X::X:X
ipv6 pim (vrf NAME|) anycast-rp X:X::X:X X:X::X:X
no ipv6 pim anycast-rp X:X::X:X
no ipv6 pim anycast-rp X:X::X:X X:X::X:X
no ipv6 pim (vrf NAME|) anycast-rp X:X::X:X
no ipv6 pim (vrf NAME|) anycast-rp X:X::X:X X:X::X:X
```

Parameters

`vrf`	The VPN routing/forwarding instance.
`NAME`	Specify the name of the VPN routing/forwarding instance.
`X:X::X:X`	Unicast IPv6 address of the Anycast RP set. An Anycast RP set is a collection of RPs in the same domain.
`X:X::X:X`	Destination IPv6 address where Register messages are copied and sent. A Member RP is an individual RP member in the Anycast RP set.

Command Mode

Configure mode

Examples

The following example shows how to configure the Anycast RP in the RP set.

```
#configure terminal
(config)#ipv6 pim anycast-rp 2:2::2:2 20:20::20:20
```

The following example shows how to remove the configuration.

```
#configure terminal
(config)#no ipv6 pim anycast-rp 2:2::2:2 20:20::20:20
```

ipv6 pim bidir-enable

Use this command to enable the bidirectional PIM.

Use the `no` option with this command to disable bidirectional PIM.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ipv6 pim bidir-enable
```

```
no ipv6 pim bidir-enable
```

Parameters

None

Command Mode

Global mode

Examples

```
#configure terminal
(config)#ipv6 pim bidir-enable
```

```
#configure terminal
(config)#no ipv6 pim bidir-enable
```

ipv6 pim bidir-neighbor-filter

Use this command to configure an access list (ACL) to specify the bidirectionally capable neighbors that participate in the designated forwarder (DF) election.

Use the `no` command to allow all neighbors to participate in DF election.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ipv6 pim bidir-neighbor-filter (<1-99>|WORD)
no ipv6 pim bidir-neighbor-filter
```

Parameters

`<1-99>`	IP standard access-list
`WORD`	IP named standard access list

Command Mode

Interface Configure mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim bidir-neighbor-filter 14
(config-if)#exit
(config)#ip access-list deny 192.168.1.53
(config)#ip access-list permit any
```

ipv6 pim bidir-offer-interval

Use this command to configure the designated forwarder (DF) election offer message interval time.

Use the no command to revert back the offer interval period to the default value.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ipv6 pim bidir-offer-interval <1-20000> (msec|)
no ipv6 pim bidir-offer-interval
```

Parameters

<1-2000>	Specify interval time in seconds
msec	Specify interval time in milliseconds

Command Default

The default value for interval time is 100 ms.

Command Mode

Global mode

Examples

```
#configure terminal
(config)#ipv6 pim bidir-offer-interval 123 msec

(config-if)#no ipv6 pim bidir-offer-interval
```

ipv6 pim bidir-offer-limit

Use this command to configure the number of unanswered offers before the device changes to the designated forwarder (DF).

Use the `no` command to remove the offer limit.

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ipv6 pim bidir-offer-limit <4-100>
no ipv6 pim bidir-offer-limit
```

Parameters

`<4-100>`	Specify the number of unanswered offers.

Command Default

The default value is three unanswered offers.

Command Mode

Global mode

Examples

```
#configure terminal
(config)#ipv6 pim bidir-offer-limit 99

(config)#no ipv6 pim bidir-offer-limit
```

ipv6 pim bind ecmp-bundle

Use this command to bind interfaces to an ECMP Bundles.

Use the `no` option with this command to unbind the interfaces from an ECMP Bundles

Note: This CLI is not supported on Hardware platform.

Command Syntax

```
ipv6 pim bind ecmp-bundle WORD
no ipv6 pim bind ecmp-bundle WORD
```

Parameter

`WORD`	ECMP bundle name

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ipv6 pim bind ecmp-bundle ebund1

(config-if)#no ipv6 pim bind ecmp-bundle ebund1
```

ipv6 pim bsr-border

Use this command to prevent bootstrap router (BSR) messages from being sent or received through an interface.

When this command is configured on an interface, no PIM Version 2 BSR messages are sent or received through the interface. Use this command to configure an interface bordering another PIM domain to avoid the exchange of BSR messages between the two domains. BSR messages should not be exchanged between different domains because routers in one domain may elect rendezvous points (RPs) in the other domain, resulting in a protocol malfunction or loss of isolation between the domains.

Use the `no` option with this command to remove the BSR border configuration.

Note: This command does not set up multicast boundaries. It only sets up a PIM domain BSR message border.

Command Syntax

```
ipv6 pim bsr-border
no ipv6 pim bsr-border
```

Parameters

None

Default

Bootstrap router border configuration is disabled by default.

Command Mode

Interface mode

Examples

The following example configures the interface to be the PIM domain border:

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim bsr-border

(config)#interface eth0
(config-if)#no ipv6 pim bsr-border
```

ipv6 pim bsr-candidate

Use this command to give the router the candidate BSR status using the name the interface.

Use the `no` option with this command to disable this function.

Note: This command does not set up multicast boundaries. It only sets up a PIM domain BSR message candidate

Command Syntax

```
ipv6 pim bsr-candidate IFNAME
ipv6 pim bsr-candidate IFNAME <0-32>
ipv6 pim bsr-candidate IFNAME <0-32> <0-255>
ipv6 pim (vrf NAME|) bsr-candidate IFNAME
ipv6 pim (vrf NAME|) bsr-candidate IFNAME <0-32>
ipv6 pim (vrf NAME|) bsr-candidate IFNAME <0-32> <0-255>
no ipv6 pim bsr-candidate (IFNAME|)
no ipv6 pim (vrf NAME|) bsr-candidate (IFNAME|)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`IFNAME`	Specify the name of the interface
`<0-32>`	Specify a hash mask length for RP selection
`<0-255>`	Specify a priority for a BSR candidate

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 pim bsr-candidate eth0 20 30
```

ipv6 pim cisco-register-checksum

Use this command to configure the option to calculate the register checksum over the whole packet. This command is used to inter-operate with older Cisco IOS versions.

Use the `no` option with this command to revert to the default settings.

Command Syntax

```
ipv6 pim cisco-register-checksum
ipv6 pim cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
ipv6 pim (vrf NAME|) cisco-register-checksum
ipv6 pim (vrf NAME|) cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
no ipv6 pim cisco-register-checksum
no ipv6 pim cisco-register-checksum group-list (<1-99>|<1300-1999>|WORD)
no ipv6 pim (vrf NAME|) cisco-register-checksum
no ipv6 pim (vrf NAME|) cisco-register-checksum group-list (<1-99>|<1300-
  1999>|WORD)
```

Parameters

`vrf`	The VPN routing/forwarding instance.
`NAME`	Specify the name of the VPN routing/forwarding instance.
`group-list`	Use this parameter to configure the option to calculate the register checksum over the whole packet on multicast groups specified by the access-list.
`<1-99>`	Specify an IP standard access-list.
`<1300-1999>`	Specify an IP access-list (expanded range).
`WORD`	IP named standard access list.

Default

This command is disabled by default. By default, Register Checksum is calculated only over the header.

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 pim cisco-register-checksum

(config)#ipv6 pim cisco-register-checksum group-list G1
(config)#ipv6 access-list filter permit ff1e:10/128
```

ipv6 pim

Use this command to enable IPv6 PIM dense-mode or sparse-mode or sparse-dense-mode on the current interface.

Use the `no` option with this command to disable IPv6 PIM dense-mode or sparse-mode or sparse-dense-mode on the interface.

Command Syntax

```
ipv6 pim (dense-mode|sparse-mode|sparse-dense-mode)
no ipv6 pim (dense-mode|sparse-mode|sparse-dense-mode)
```

Parameters

`dense-mode`	Enable IPv6 PIM dense-mode operation
`sparse-mode`	Enable IPv6 PIM sparse-mode operation
`sparse-dense-mode`	Enable IPv6 PIM sparse-dense-mode operation

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim dense-mode

(config)#interface eth0
(config-if)#no ipv6 pim dense-mode

(config)#interface eth0
(config-if)#ipv6 pim sparse-dense-mode

(config-if)#no ipv6 pim sparse-dense-mode
```

ipv6 pim passive

Use this command to enable or disable passive mode operation for local members on the interface. Passive mode essentially stops PIM transactions on the interface, allowing only the Internet Group Management Protocol (IGMP) mechanism to be active.

Use the `no` option with this command to disable the passive mode.

Command Syntax

```
ipv6 pim (dense-mode|sparse-mode) passive
no ipv6 pim (dense-mode|sparse-mode) passive
```

Parameters

`dense-mode`	Enable passive operation for PIM dense-mode
`sparse-mode`	Enable passive operation for PIM sparse-mode

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim dense-mode passive

(config)#interface eth0
(config-if)#no ipv6 pim dense-mode passive

#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim sparse-mode passive

(config)#interface eth0
(config-if)#no ipv6 pim sparse-mode passive
```

ipv6 pim dense-group

Use this command to force a particular group to always follow dense mode irrespective of whether RP mapping is available in SM-DM mode.

Use the `no` option with this command to delete the group-address and follow SM-DM rules.

Command Syntax

```
ipv6 pim dense-group A.B.C.D
ipv6 pim (vrf NAME|) dense-group A.B.C.D
no ipv6 pim dense-group A.B.C.D
no ipv6 pim (vrf NAME|) dense-group A.B.C.D
```

Parameter

`A.B.C.D`	Specify IP address
`NAME`	Specify the name of the VRF

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth1
(config-if)#ipv6 pim dense-group 1ffe:11::11:11

(config-if)# no ip pim dense-group 1ffe:1::11:11
```

ipv6 pim dr-priority

Use this command to set the designated router's priority value.

Use the `no` option with this command to remove the priority from the DR.

Command Syntax

```
ipv6 pim dr-priority <0-4294967294>
no ipv6 pim dr-priority (<0-4294967294>|)
```

Parameter

`<0-4294967294>` Valid range of values for DR priority, with a higher value resulting in a higher preference

Default

The default DR priority value is 1.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim dr-priority 11234

(config)#interface eth0
(config-if)#no ipv6 pim dr-priority 11234
```

ipv6 pim ecmp-bundle

Use this command to create an ECMP bundle.

Use the `no` option with this command to delete an ECMP bundle.

Command Syntax

```
ipv6 pim ecmp-bundle WORD
ipv6 pim (vrf NAME|) ecmp-bundle WORD
ipv6 pim ecmp-bundle WORD
no ipv6 pim (vrf NAME|) ecmp-bundle WORD
```

Parameter

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`WORD`	ECMP bundle name

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim exmp-bundle ebund1

(config)#no ipv6 pim ecmp-bundle ebund1
```

ipv6 pim exclude-genid

Use this command to exclude the GenID (generated ID) option from Hello packets sent by the PIM module on an interface.This command is used to inter-operate with older Cisco IOS versions.

Use the `no` option with this command to restore PIM its default setting.

Command Syntax

```
ipv6 pim exclude-genid
no ipv6 pim exclude-genid
```

Parameters

None

Default

By default, this command is disabled; that is, the GenID option is included.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim exclude-genid

(config)#interface eth0
(config-if)#no ipv6 pim exclude-genid
```

ipv6 pim hello-holdtime

Use this command to configure a hello holdtime other than the default (`3.5 * hello_interval` seconds).

When configuring `hello-holdtime`, if the configured value is less than the current `hello_interval`, it is refused.

When removing a configured `hello_holdtime`, the value is reset to (`3.5 *` current `hello_interval)` value.

Every time the hello_interval is updated, the hello-holdtime is also updated according to rules below:

If the hello_holdtime is not configured, or if the hello_holdtime is configured, but is less than the current hello_interval value, it is modified to (3.5 * hello_interval). Otherwise, the configured value is maintained.

Use the `no` option with this command to remove the configured hello-holdtime.

Command Syntax

```
ipv6 pim hello-holdtime <1-65535>
no ipv6 pim hello-holdtime
```

Parameter

`<1-65535>`	Range of values for hello-holdtime, in seconds

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface fxp0
(config-if)#ipv6 pim hello-holdtime 123

(config)#interface fxp0
(config-if)#no ipv6 pim hello-holdtime
```

ipv6 pim hello-interval

Use this command to configure a hello interval value other than the default. When a hello-interval is configured and hello-holdtime is not configured, or when the hello-holdtime value configured is less than the new hello-interval value, the holdtime value is modified to (3.5 * hello_interval). Otherwise, the hello-holdtime value is the configured value.

Use the `no` option with this command to reset the hello-interval to its default value.

Command Syntax

```
ipv6 pim hello-interval <1-65535>
no ipv6 pim hello-interval
```

Parameter

`<1-65535>`	Range of values for the hello-interval

Note: No fractional values are allowed.

Default

The default value for hello-interval is 30 seconds.

Command Mode

Interface mode

Example

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim hello-interval 123

(config)#interface eth0
(config-if)#no ipv6 pim hello-interval
```

ipv6 pim ignore-rp-set-priority

Use this command to ignore the RP-SET priority value, and use only the hashing mechanism for RP selection. This command is used to inter-operate with older Cisco IOS versions.

Use the `no` option with this command to remove this setting.

Command Syntax

```
ipv6 pim ignore-rp-set-priority
ipv6 pim (vrf NAME|) ignore-rp-set-priority
no ipv6 pim ignore-rp-set-priority
no ipv6 pim (vrf NAME|) ignore-rp-set-priority
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim ignore-rp-set-priority

#configure terminal
(config)#no ipv6 pim ignore-rp-set-priority
```

ipv6 pim jp-timer

Use this command to set a PIM join/prune timer.

Use the `no` option with this command to remove the join/prune timer.

Command Syntax

```
ipv6 pim jp-timer <1-65535>
ipv6 pim (vrf NAME|) jp-timer <1-65535>
no ipv6 pim jp-timer
no ipv6 pim jp-timer <1-65535>
no ipv6 pim (vrf NAME|) jp-timer
no ipv6 pim (vrf NAME|) jp-timer <1-65535>
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`<1-65535>`	Range of values for the Join/Prune timer, in seconds

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim jp-timer 234

#configure terminal
(config)#no ipv6 pim jp-timer 234
```

ipv6 pim neighbor-filter

Use this command to enable filtering of neighbors on the interface.

When configuring a neighbor filter and when denied by filtering access list, PIM either does not establish adjacency with a neighbor or terminates adjacency with existing neighbors.

Use the `no` option with this command to disable filtering of neighbors on the interface.

Command Syntax

```
ipv6 pim neighbor-filter (<1-99>|WORD)
no ipv6 pim neighbor-filter (<1-99>|WORD)
```

Parameters

`<1-99>`	An IP standard access-list number
`WORD`	Name of an IP standard access list

Command Mode

Interface mode

Default

This command is disabled; by default, there is no filtering.

Example

```
(config)#interface fxp0
(config-if)#ipv6 pim neighbor-filter F1
(config-if)#exit
(config)#ipv6 access-list filter deny fe80:20e:cff:fe01:facc
(config)#ipv6 access-list filter permit any
```

ipv6 pim propagation-delay

Use this command to configure the propagation delay value.

Use the no option with this command to return the propagation delay to its default value.

Command Syntax

```
ipv6 pim propagation-delay <1000-5000>
no ipv6 pim propagation-delay
```

Parameter

<1000-5000>	Range of values for propagation delay, in milliseconds

Default

The default propagation delay is 500 milliseconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim propagation-delay 1000

(config)#interface eth0
(config-if)#no ipv6 pim propagation-delay
```

ipv6 pim register-rate-limit

Use this command to configure the rate of Register packets sent by this designated router (DR), in number of packets per second.

Use the no option to remove the register-rate-limit configuration.

Note: The configured rate is per (S,G) state, and is not a system-wide rate.

Command Syntax

```
ipv6 pim register-rate-limit <1-65535>
ipv6 pim (vrf NAME|) register-rate-limit <1-65535>
no ipv6 pim register-rate-limit
no ipv6 pim (vrf NAME|) register-rate-limit
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
<1-65535>	Range of values for packets to send per second

Command mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 pim register-rate-limit 3444

#configure terminal
(config)#no ipv6 pim register-rate-limit
```

ipv6 pim register-rp-reachability

Use this command to enable the RP reachability check for PIM Registers at the DR.

Use the no option to reset to the default state.

Command Syntax

```
ipv6 pim register-rp-reachability
ipv6 pim (vrf NAME|) register-rp-reachability
no ipv6 pim register-rp-reachability
no ipv6 pim (vrf NAME|) register-rp-reachability
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Configure mode

Default

The default setting is no checking for rendezvous point reachability,

Example

```
#configure terminal
(config)#ipv6 pim register-rp-reachability
```

ipv6 pim register-source

Use this command to configure the source address of Register packets sent by this DR, overriding the default source address, which is the address of the RPF interface toward the source host.

Use the `no` option to remove the source address of register packets sent by this DR, and reset it to use the default source address, that is, the address of the RPF interface toward the source host.

The configured address must be a reachable address so the RP can send corresponding Register-Stop messages in response. This address is usually the loopback interface address, but can also be other physical addresses. The address must be advertised by unicast routing protocols on the DR.

Note: The interface configured does not require PIM to be enabled.

Command Syntax

```
ipv6 pim register-source IFNAME
ipv6 pim register-source X:X::X:X
ipv6 pim (vrf NAME|) register-source IFNAME
ipv6 pim (vrf NAME|) register-source X:X::X:X
no ipv6 pim register-source
no ipv6 pim (vrf NAME|) register-source
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`X:X::X:X`	The IP address to be used as the source of the register packets
`IFNAME`	The name of the interface to be used as the source of the register packets

Command mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim register-source 3ffe:406::1

#configure terminal
(config)#no ipv6 pim register-source
```

ipv6 pim register-suppression

Use this command to configure the register-suppression time, in seconds, overriding the default value of 60 seconds. Configuring this value modifies register-suppression time at the DR; configuring this value at the RP modifies the RP-keepalive-period value if the `ipv6 pim rp-register-kat` command is not used.

Use the no option to remove the register-suppression setting.

Command Syntax

```
ipv6 pim register-suppression <1-65535>
ipv6 pim (vrf NAME|) register-suppression <1-65535>
no ipv6 pim register-suppression
no ipv6 pim (vrf NAME|) register-suppression
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`<1-65535>`	Register suppression time, in seconds

Command mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim register-suppression 555

#configure terminal
(config)#no ipv6 pim register-suppression
```

ipv6 pim router-id

Use this command to configure PIM router-ID to uniquely identify the router.By default, PIM registers for the NSM router-id service. This command will override the router-id received from NSM.

Use the `no` option with this command to unconfigure PIM router-ID. This will make PIM fall back to the NSM router-id

Command Syntax

```
ipv6 pim (vrf NAME|) router-id A.B.C.D
no ipv6 pim (vrf NAME|) router-id A.B.C.D
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`A.B.C.D`	Specify the Router ID

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim router-id 1.1.1.1

(config)#no ipv6 pim router-id 1.1.1.1
```

ipv6 pim rp-address

Use this command to statically configure an RP address for multicast groups.

Use the `no` option to remove the RP address.

ZebOS-XP PIMv6 supports multiple static RPs. It also supports usage of static-RP and BSR mechanism simultaneously. The following list states the correct usage of this command:

- To support embedded RP, the router configured as the RP must use a configured access-list that permits the embedded RP group ranges derived from the embedded RP address. If embedded RP support is available, only the RP must be statically configured as the RP for the embedded RP ranges: No additional configuration is required on other PIMv6 routers. The other routers will discover the RP address from the IPv6 group address. For these routers to select a static RP instead of the embedded RP, the specific embedded RP group range must be configured in the access list of the static RP, and embedded RP support must be disabled.
- If RP-address configured through BSR and RP-address configured statically are both available for a group range, the RP-address configured through BSR is chosen over statically configured RP-address.
- A single static-RP can be configured for multiple group ranges using Access Lists. However, configuring multiple static RPs (using `ipv6 pim rp-address` command) with the same RP address is not allowed. The static-RP can either be configured for the whole multicast group range `ff00::/8` (without ACL) or for specific group ranges (using ACL).

  For example, configuring `ipv6 pim rp-address 3ffe:10:10:5::153` will configure static-RP `3ffe:10:10:5::153` for the default group range `ff00::/8`. Configuring `ipv6 pim rp-address 3ffe:20:20:5::153 grp-list` will configure static-RP `3ffe:20:20:5::153` for all the group ranges represented by `permit` filters in `grp-list` ACL.
- If multiple static-RPs are available for a group range, then one with the highest IP address is chosen.
- Only `permit` filters in ACL are considered as valid group ranges. The default `permit` filter `::/0` is converted to default multicast filter `ff00::/8`.
- When selecting static-RPs for a group range, the first element, with static-RP with the highest IP address is chosen.
- Group mode and RP address mappings learned through BSR take precedence over mappings statistically defined by the `ipv6 pim rp-address` command without the `override` keyword. Commands with the `override` keyword take precedence over dynamically learned mappings.

Command Syntax

```
ipv6 pim rp-address A.B.C.D (bidir|)(override|)
ipv6 pim rp-address A.B.C.D (<1-99>|<1300-1999>|WORD) (bidir|)(override|)
ipv6 pim (vrf NAME|) rp-address A.B.C.D (bidir|)(override|)
ipv6 pim (vrf NAME|) rp-address A.B.C.D (<1-99>|<1300-1999>|WORD)(bidir|)
  (override|)
no ipv6 pim rp-address A.B.C.D (bidir|)
no ipv6 pim rp-address A.B.C.D (<1-99>|<1300-1999>|WORD) (bidir|)
no ipv6 pim (vrf NAME|) rp-address A.B.C.D
no ipv6 pim (vrf NAME|) rp-address A.B.C.D (<1-99>|<1300-1999>|WORD)(bidir|)
```

Parameters

`bidir`	Specify the BIDIR RP address

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`X:X::X:X`	IPv6 address for the RP
`<1-99>`	An IP Standard access-list
`<1300-1999>`	An IP Standard access-list (expanded range)
`WORD`	Access-list name
`override`	Static RP overrides dynamically-learned RP

Command Mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 pim rp-address 3ffe:30:30:5::153 4

#configure terminal
(config)#no ipv6 pim rp-address 3ffe:30:30:5::153 4
```

ipv6 pim rp-candidate

Use this command to give the router a candidate RP status using the IPv6 address of the specified interface.

Additionally, `bidir` Indicates that the multicast groups specified by the `group-list` argument are to operate in bidirectional mode. If the command is configured without this option, the groups specified will operate in PIM sparse mode; group-list specifies the standard IP access list number or name that defines the group prefixes that are advertised in association with the RP address.

Use the `no` option along with this command to remove the settings.

Command Syntax

```
ipv6 pim (vrf NAME|) rp-candidate IFNAME (bidir|) ((group-list (<1-99>|WORD))|)
  (interval <1-16383>|) (priority <0-255>|)
no ipv6 pim (vrf NAME|) rp-candidate (IFNAME|)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`IFNAME`	Specify an interface name
`bidir`	Bidirectional mode
`<1-99>`	An IP Standard access-list
`WORD`	A named standard access list
`<0-16383>`	Range of values for candidate-RP advertisement interval, in seconds
`<0-255>`	Range of values for priority of an RP candidate

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim rp-candidate eth0

(config)#no ipv6 pim rp-candidate eth0
```

ipv6 pim rp-register-kat

Use this command to configure a Keepalive Timer (KAT) value for (S,G) states at RP to monitor PIM register packets, overriding the generic KAT timer value.

Use the no option to remove this configuration.

Command Syntax

```
ipv6 pim rp-register-kat <1-65535>
ipv6 pim (vrf NAME|) rp-register-kat <1-65535>
no ipv6 pim rp-register-kat
no ipv6 pim (vrf NAME|) rp-register-kat
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
<1-65535>	Range of values for a KAT time in seconds

Command mode

Configure mode

Example

```
#configure terminal
(config)#ipv6 pim rp-register-kat 3454

(config)#no ipv6 pim rp-register-kat
```

ipv6 pim spt-threshold

Use this command to configure an SPT (System Posture Token) threshold.

Use the `no` option with this command to remove a configured SPT threshold.

Note: This option is binary, meaning that switching to SPT happens either the first data packet is received, or not at all. It is not rate-based.

Command Syntax

```
ipv6 pim spt-threshold
ipv6 pim spt-threshold group-list (<1-99>|<1300-1999>|WORD)
ipv6 pim (vrf NAME|) spt-threshold
ipv6 pim (vrf NAME|) spt-threshold group-list (<1-99>|<1300-1999>|WORD)
no ipv6 pim spt-threshold
no ipv6 pim spt-threshold group-list (<1-99>|<1300-1999>|WORD)
no ipv6 pim (vrf NAME|) spt-threshold
no ipv6 pim (vrf NAME|) spt-threshold group-list (<1-99>|<1300-1999>|WORD)
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`group-list`	Enable the ability for the last-hop PIM router to switch to SPT for multicast group addresses indicated by the given access-list
`<1-99>`	An IP Standard access-list
`<1300-1999>`	An IP Standard access-list (expanded range)
`WORD`	A named standard access list

Command Mode

Configure mode

Examples

```
#configure terminal
(config)#ipv6 pim spt-threshold group-list LIST1

#configure terminal
(config)#no ipv6 pim spt-threshold
```

ipv6 pim ssm

Use this command to configure Source Specific Multicast (SSM), and define a range of IP multicast addresses. The default keyword defines the SSM range as ff3x::/32. To define the SSM range to be other than the default, use the access-list.

When an SSM range of IP multicast addresses is defined with the `ipv6 pim ssm` command, the no (*,G) or (S,G,rpt) state is initiated for groups in the SSM range.

The messages corresponding to these states are no accepted or originated in the SSM range.

Use the `no` form of this command to disable the SSM range.

Command Syntax

```
ipv6 pim ssm default
ipv6 pim ssm range (<1-99>|WORD)
ipv6 pim (vrf NAME|) ssm default
ipv6 pim (vrf NAME|) ssm range (<1-99>|WORD)
no ipv6 pim ssm
no ipv6 pim (vrf NAME|) ssm
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`default`	Defines the FF3x::/32 group range for SSM
`range`	Define an access-list for group range to use for SSM
`<1-99>`	Range of values for a standard access-list
`WORD`	A named standard access list

Command Mode

Configure mode

Example

The following example shows how to configure SSM service for the IP address range defined by access list 10:

```
#configure terminal
(config)#access-list 10 permit 225.1.1.1
(config)#ipv6 pim ssm range 4
```

ipv6 pim state-refresh origination-interval

Use this command to configure a PIM State-Refresh origination interval other than the default value. The origination interval is the number of seconds between PIM State Refresh control messages.

Use the `no` option with this command to return the origination interval to its default value.

Command Syntax

```
ipv6 pim state-refresh origination-interval <1-100>
no ipv6 pim state-refresh origination-interval
```

Parameter

`<1-100>`	Range of values for state-refresh origination interval, in seconds

Note: No fractional values are allowed for the interval time.

Default

The default state-refresh origination interval is 60 seconds.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim state-refresh origination-interval 65

(config)#interface eth0
(config-if)#ipv6 pim state-refresh origination-interval
```

ipv6 pim unicast-bsm

Use this command to enable support for sending and receiving unicast Bootstrap Messages (BSM) on an interface. This command supports backward-compatibility with older versions of the Bootstrap Router specification, which specifies unicast BSM to refresh the state of new or restarting neighbors.

Use the `no` option with this command to disable unicast bootstrap messaging on an interface.

Command Syntax

```
ipv6 pim unicast-bsm
```

```
no ipv6 pim unicast-bsm
```

Parameters

None

Default

Unicast bootstrap messaging is disabled by default.

Command Mode

Interface mode

Examples

```
#configure terminal
(config)#interface eth0
(config-if)#ipv6 pim unicast-bsm

(config)#interface eth0
(config-if)#no ipv6 pim unicast-bsm
```

show debugging ipv6 pim

Use this command to display the debug status for the IPv6 PIM process.

Command Syntax

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

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec mode

Examples

```
# show debugging ipv6 pim
```

show ipv6 pim ecmp-bundle

Use this command to display the ECMP bundle information.

Command Syntax

```
show ipv6 pim (vrf NAME|) ecmp-bundle (WORD|)
show ipv6 pim ecmp-bundle (WORD|)
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
WORD	ECMP Bundle name

Command Mode

Privileged Exec mode

Examples

```
# show ipv6 pim ecmp-bundle
rtr6#show  ipv6   pim  ecmp-bundle bundle1
Name        : bundle1
Interface   : <ECMP REDIRECT status>
       eth2 : not allowed
       eth3 : not allowed
```

show ipv6 pim interface

Use this command to display information about interfaces configured for PIM.

Command Syntax

```
show ipv6 pim interface
show ipv6 pim interface detail
show ipv6 pim interface (IFNAME|) df (A.B.C.D|)
show ipv6 pim (vrf NAME|) interface
show ipv6 pim (vrf NAME|) interface detail
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`detail`	Display detailed information about a PIM interface
`df`	Display the IP address of the elected designated forwarder (DF)
`A.B.C.D`	Display the rendezvous point (RP) IP address.

Command Mode

Exec mode and Privileged Exec mode

Examples

```
Router# show ipv6 pim interface df

Interface          RP               DF Winner        Metric
eth1       fe80::5054:ff:fece:7691   fe12::5053:ff:fece:7310       0
           fe80::5054:ff:fece:7692   fe12::5053:ff:fece:7311       0
         fe80::5054:ff:fece:7693     fe12::5053:ff:fece:7312       409600
eth2       fe80::5054:ff:fece:7691   fe12::5050:ff:fece:7313       0


Router# show ipv6 pim interface eth1 df fe80::5054:ff:fece:7692

Designated Forwarder election for eth1,
fe12::5053:ff:fece:7310, RP fe80::5054:ff:fece:7692
  State                           Non-DF
  Offer count is                  0
  Current DF ip address           fe12::5053:ff:fece:7311
  Last winner metric preference   0
  Last winner metric              0

localhost.localdomain#show ipv6 pim interface
Interface VIFindex Ver/   Nbr    DR
                   Mode   Count  Prior
eth1      0        v2/SD   0      1
    Address       : fe80::5054:ff:feea:7628
    Global Address: 3ffe::3
    DR            : this system
```

```
eth2      2        v2/S   0      1
    Address       : fe80::5054:ff:fe39:f54f
    Global Address: 2ffe::2
    DR            : this system
eth3      3        v2/D   0      1
    Address       : fe80::5054:ff:feda:f40e
    Global Address: 1ffe::1
localhost.localdomain#

r6#show  ipv6  pi interface  detail
eth1 (vif 0):
  Address fe80::5054:ff:fe14:857, DR fe80::5054:ff:fe14:857
  Hello period 30 seconds, Next Hello in 20 seconds
  Triggered Hello period 5 seconds
  Propagation delay is 1000 milli-seconds
  Interface ID: Router-ID:1.1.1.1 Local-ID 3
  Secondary addresses:
   3ffe:192:168:10::53
  Neighbors:

eth2 (vif 2):
  Address fe80::5054:ff:fe52:219e, DR fe80::5054:ff:fe63:c0ae
  Hello period 30 seconds, Next Hello in 20 seconds
  Triggered Hello period 5 seconds
  Propagation delay is 1000 milli-seconds
  Interface ID: Router-ID:1.1.1.1 Local-ID 4
  ECMP REDIRECT, bundle : bundle1, status :  allowed
  Secondary addresses:
   3ffe:192:168:1::53
  Neighbors:
   fe80::5054:ff:fe21:5e56
   fe80::5054:ff:fe29:f7f3
   fe80::5054:ff:fe63:c0ae
```

show ipv6 pim mroute

Use this command to display information the IPv6 multicast routing table, or the IPv6 multicast routing table based on the specified address or addresses.

Command Syntax

```
show ipv6 pim mroute (detail|)
show ipv6 pim mroute X:X::X:X (detail|)
show ipv6 pim mroute X:X::X:X X:X::X:X (detail|)
show ipv6 pim (vrf NAME|) mroute (detail|)
show ipv6 pim (vrf NAME|) mroute X:X::X:X (detail|)
show ipv6 pim (vrf NAME|) mroute X:X::X:X X:X::X:X (detail|)
```

Parameter

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`X:X::X:X`	Display all entries for this group IPv6 address
`X:X::X:X`	Display all entries for this source IPv6 address

Note: A group IP address and a source IP address cannot be used simultaneously.

`detail`	Display detailed PIM multicast routing table information

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show ipv6 pim mroute
```

show ipv6 pim neighbor

Use this command to display IPv6 PIM neighbor information.

Command Syntax

```
show ipv6 pim neighbor (detail|)
show ipv6 pim neighbor IFNAME (detail|)
show ipv6 pim neighbor IFNAME X:X::X:X (detail|)
show ipv6 pim (vrf NAME|) neighbor (detail|)
show ipv6 pim (vrf NAME|) neighbor IFNAME (detail|)
show ipv6 pim (vrf NAME|) neighbor IFNAME X:X::X:X (detail|)
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
IFNAME	Name of the interface
X:X::X:X	IPv6 address of the neighbor interface
detail	Display detailed information for a PIM neighbor

Command Mode

Exec mode and Privileged Exec mode

Examples

```
#show ipv6 pim neighbor detail
rtr6# show  ipv6  pim  neighbor  detail
Nbr fe80::5054:ff:fe21:5e56 (eth2)
Expires in 83 seconds, uptime 01:37:14
Holdtime: 105 secs, T-bit: off, Lan delay: 1, Override interval: 3
DR priority: 1, Gen ID: 321289676,
Interface ID: Router-ID: 4.4.4.4 Local-ID: 4,
ECMP REDIRECT enabled
Secondary addresses:
  3ffe:192:168:1::150

Nbr fe80::5054:ff:fe29:f7f3 (eth2)
Expires in 79 seconds, uptime 01:37:15
Holdtime: 105 secs, T-bit: off, Lan delay: 1, Override interval: 3
DR priority: 1, Gen ID: 847253139,
Interface ID: Router-ID: 2.2.2.2 Local-ID: 4,
ECMP REDIRECT enabled
Secondary addresses:
  3ffe:192:168:1::149
```

show ipv6 pim nexthop

Use this command to display the nexthop information from NSM as used by IPv6 PIM.

Command Syntax

```
show ipv6 pim nexthop
show ipv6 pim (vrf NAME|) nexthop
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Exec mode and Privileged Exec mode

Example

```
#show ipv6 pim nexthop
```

show ipv6 pim bsr-router

Use this command to show the bootstrap router v2 address.

Command Syntax

```
show ipv6 pim bsr-router
show ipv6 pim (vrf NAME|) bsr-router
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec and Exec mode

Example

```
#show ipv6 pim bsr-router
```

show ipv6 pim local-members

Use this command to display information about local membership for PIM interfaces.

Command Syntax

```
show ipv6 pim local-members
show ipv6 pim local-members IFNAME
show ipv6 pim (vrf NAME|) local-members
show ipv6 pim (vrf NAME|) local-members IFNAME
```

Parameters

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance
IFNAME	Display neighbors for an interface name

Command Mode

Privileged Exec and Exec mode

Example

```
#show ipv6 pim local-members
```

show ipv6 pim rp-hash

Use this command to display the rendezvous point (RP) based on the group selected.

Command Syntax

```
show ipv6 pim rp-hash X:X::X:X
show ipv6 pim (vrf NAME|) rp-hash X:X::X:X
```

Parameters

`vrf`	The VPN routing/forwarding instance
`NAME`	Specify the name of the VPN routing/forwarding instance
`X:X::X:X`	Specify a group address

Command Mode

Privileged Exec mode and Exec mode

Example

```
#show ipv6 pim rp-hash ff02::d
```

show ipv6 pim rp mapping

Use this command to display the mappings for the PIM group to the active rendezvous points.

Command Syntax

```
show ipv6 pim rp mapping
show ipv6 pim (vrf NAME|) rp mapping
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec mode and Exec mode

Example

```
#show ipv6 pim rp mapping
```

undebug all ipv6 pim

Use this command to disable all PIM debugging.

Command Syntax

```
undebug all ipv6 pim
undebug (vrf NAME|) all ipv6 pim
```

Parameter

vrf	The VPN routing/forwarding instance
NAME	Specify the name of the VPN routing/forwarding instance

Command Mode

Privileged Exec mode and Exec mode

Example

```
#undebug all ipv6 pim
```

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