# Configuring PIM MIB Extension for IP Multicast


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# Information About PIM MIB Extension for IP Multicast

## PIM MIB Extensions for SNMP Traps for IP Multicast

Protocol Independent Multicast (PIM) is an IP multicast routing protocol used for routing multicast data packets to multicast groups. RFC 2934 defines the PIM MIB for IPv4, which describes managed objects that enable users to remotely monitor and configure PIM using Simple Network Management Protocol (SNMP).

PIM MIB extensions introduce the following new classes of PIM notifications:

- neighbor-change--This notification results from the following conditions:
  - A router's PIM interface is disabled or enabled (using the **ip pim** command in interface configuration mode)
  - A router's PIM neighbor adjacency expires (defined in RFC 2934)
- rp-mapping-change--This notification results from a change in the rendezvous point (RP) mapping information due to either Auto-RP messages or bootstrap router (BSR) messages.
- invalid-pim-message--This notification results from the following conditions:
  - An invalid (*, G) Join or Prune message is received by the device (for example, when a router receives a Join or Prune message for which the RP specified in the packet is not the RP for the multicast group)
  - An invalid PIM register message is received by the device (for example, when a router receives a register message from a multicast group for which it is not the RP)

# Benefits of PIM MIB Extensions

PIM MIB extensions:

- Allow users to identify changes in the multicast topology of their network by detecting changes in the RP mapping.
- Provide traps to monitor the PIM protocol on PIM-enabled interfaces.
- Help users identify routing issues when multicast neighbor adjacencies expire on a multicast interface.
- Enable users to monitor RP configuration errors (for example, errors due to flapping in dynamic RP allocation protocols like Auto-RP).

# How to Configure PIM MIB Extension for IP Multicast

## Enabling PIM MIB Extensions for IP Multicast

Perform this task to enable PIM MIB extensions for IP multicast.

**Note**

- The pimInterfaceVersion object was removed from RFC 2934 and, therefore, is no longer supported in software.
- The following MIB tables are not supported in Cisco software:
  - pimIpMRouteTable
  - pimIpMRouteNextHopTable

### Procedure

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 3** | **snmp-server enable traps pim** [**neighbor-change** \| **rp-mapping-change** \| **invalid-pim-message**] | Enables a device to send PIM notifications.<br>• **neighbor-change** --This keyword enables notifications indicating when a device's |

| | Command or Action | Purpose |
|---|---|---|
| | **Example:**<br><br>`Device(config)# snmp-server enable traps pim neighbor-change` | PIM interface is disabled or enabled, or when a device's PIM neighbor adjacency expires.<br>• **rp-mapping-change** --This keyword enables notifications indicating a change in RP mapping information due to either Auto-RP messages or BSR messages.<br>• **invalid-pim-message** --This keyword enables notifications for monitoring invalid PIM protocol operations (for example, when a device receives a join or prune message for which the RP specified in the packet is not the RP for the multicast group or when a device receives a register message from a multicast group for which it is not the RP). |
| **Step 4** | **snmp-server host** *host-address* [**traps** \| **informs**] *community-string* **pim**<br><br>**Example:**<br><br>`Device(config)# snmp-server host 10.10.10.10 traps public pim` | Specifies the recipient of a PIM SNMP notification operation. |

# Configuration Examples for PIM MIB Extensions

## Example Enabling PIM MIB Extensions for IP Multicast

The following example shows how to configure a router to generate notifications indicating that a PIM interface of the router has been enabled. The first line configures PIM traps to be sent as SNMP v2c traps to the host with IP address 10.0.0.1. The second line configures the router to send the neighbor-change class of trap notification to the host.

```
snmp-server host 10.0.0.1 traps version 2c public pim
snmp-server enable traps pim neighbor-change
interface ethernet0/0
 ip pim sparse-mode
```

# Additional References for PIM MIB Extension for IP Multicast

### Related Documents

| Related Topic | Document Title |
|---|---|
| For complete syntax and usage information for the commands used in this chapter. | See the IP Multicast Routing Commands section of the *Command Reference (Catalyst 9500 Series Switches)* |

### Standards and RFCs

| Standard/RFC | Title |
|---|---|
| draft-kouvelas-pim-bidir-new-00.txt | A New Proposal for Bi-directional PIM |
| RFC 1112 | Host Extensions for IP Multicasting |
| RFC 1918 | Address Allocation for Private Internets |
| RFC 2770 | GLOP Addressing in 233/8 |
| RFC 3569 | An Overview of Source-Specific Multicast (SSM) |

# Feature History for PIM MIB Extension for IP Multicast

This table provides release and related information for the features explained in this module.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise

| Release | Feature | Feature Information |
|---|---|---|
| Cisco IOS XE Everest 16.5.1a | PIM MIB Extension for IP Multicast | Protocol Independent Multicast (PIM) is an IP multicast routing protocol used for routing multicast data packets to multicast groups. RFC 2934 defines the PIM MIB for IPv4, which describes managed objects that enable users to remotely monitor and configure PIM using Simple Network Management Protocol (SNMP).<br>Support for this feature was introduced on the C9500-12Q, C9500-16X, C9500-24Q, C9500-40X models of the Cisco Catalyst 9500 Series Switches. |
| Cisco IOS XE Fuji 16.8.1a | PIM MIB Extension for IP Multicast | Support for this feature was introduced on the C9500-32C, C9500-32QC, C9500-48Y4C, and C9500-24Y4C models of the Cisco Catalyst 9500 Series Switches. |

| Release | Feature | Feature Information |
|---|---|---|
| Cisco IOS XE Cupertino 17.7.1 | PIM MIB Extension for IP Multicast | This feature was implemented on the C9500X-28C8D model. |
| Cisco IOS XE Dublin 17.10.1b | PIM MIB Extension for IP Multicast | This feature was implemented on the C9500X-60L4D model. |

Use the Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/.