



PGM Router Assist Commands

Use the commands in this chapter to configure and monitor the Pragmatic General Multicast (PGM) Router Assist feature. For configuration information and examples of PGM Router Assist, refer to the “Configuring PGM Router Assist” chapter of the *Cisco IOS IP and IP Routing Configuration Guide*.

clear ip pgm router

To clear Pragmatic General Multicast (PGM) traffic statistics, use the **clear ip pgm router** EXEC command.

```
clear ip pgm router [[traffic [type number]] | [rtx-state [group-address]]]
```

Syntax Description

traffic <i>[type number]</i>	(Optional) Interface type and number whose PGM traffic statistics are cleared. If no interface type and number are provided, all traffic statistics are cleared.
rtx-state <i>[group-address]</i>	(Optional) IP address of the multicast group whose PGM re-send state is cleared. If no group address is provided, all re-send state is cleared. Clearing re-send state means the router will not forward any retransmissions corresponding to that state.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.

Usage Guidelines

This command should be used only in rare cases or during debugging. Normally, the re-send state memory is freed automatically when the information is no longer useful. Also, using this command briefly confuses the normal PGM behavior.

A reason to clear traffic statistics is to make diagnostic testing easier.

A reason to clear state might be to free the memory consumed by such state. PGM re-send state times out if no traffic keeps it alive.

Examples

The following example clears all PGM re-send state from the router:

```
clear ip pgm router rtx-state
```

Related Commands

Command	Description
ip pgm router	Enables PGM Router Assist and thereby allows PGM to operate more efficiently on the router.
show ip pgm router	Displays PGM Reliable Transport Protocol state and statistics.

ip pgm router

To enable Pragmatic General Multicast (PGM) Router Assist and thereby allow PGM to operate more efficiently on the router, use the **ip pgm router** interface configuration command. To disable PGM Router Assist for the interface, use the **no** form of the command.

ip pgm router

no ip pgm router

Syntax Description

This command has no arguments or keywords.

Defaults

PGM Router Assist is disabled for the interface.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.

Usage Guidelines

This command is highly recommended for optimal deployment of PGM Reliable Transport Protocol on a host.

Examples

In the following example, PGM Router Assist is configured on Ethernet interfaces 0 and 1:

```
ip multicast-routing
interface ethernet 0
 ip pim sparse-dense-mode
 ip pgm router
interface ethernet 1
 ip pim sparse-dense-mode
 ip pgm router
```

Related Commands

Command	Description
clear ip pgm router	Clears PGM traffic statistics.
show ip pgm router	Displays PGM Reliable Transport Protocol state and statistics.

show ip pgm router

To display Pragmatic General Multicast (PGM) Reliable Transport Protocol state and statistics, use the **show ip pgm router** EXEC command.

```
show ip pgm router [[interface type number] | [state group-address] | [traffic type number]][verbose]
```

Syntax Description

interface <i>type number</i>	(Optional) Displays interfaces on which PGM Router Assist is configured.
state [<i>group-address</i>]	(Optional) Displays PGM re-send state information per TSI. If no group address is specified, re-send state for all groups is shown.
traffic [<i>type number</i>]	(Optional) Displays PGM packet counters. If no interface type and number are specified, traffic on all interfaces is displayed. These statistics do not reflect the number of PGM data packets (ODATA) that are forwarded in a session, because these are forwarded transparently by IP multicast.
verbose	(Optional) Displays extended information about olists, timers, FEC, and DLR.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.

Examples

The following is sample output of the **show ip pgm router** command with the **interface** keyword:

```
Router# show ip pgm router interface

Address      Interface
10.1.0.2     Ethernet1/0/0 (measured drop rate 0%)
10.3.0.2     Ethernet1/0/4 (measured drop rate 0%)
```

Table 121 describes the fields in the display.

Table 121 show ip pgm router Field Descriptions

Field	Description
Address	IP address of the interface running PGM Router Assist.
Interface	Interface type and number on the router that is running PGM Router Assist, plus the drop rate measured on the interface.

The following is sample output of the **show ip pgm router** command with the **traffic** keyword. An RDATA fragment is a part of an RDATA packet that has been fragmented at the IP layer while in transit. The PGM network element has seen 2 RDATA packets that were each fragmented into three IP fragments.

```
Router# show ip pgm router traffic
```

```
FastEthernet0/0
  NAKs received          2
  NCFs transmitted      2
  RDATA forwarded       2
  RDATA frags forwarded 6
  SPMS received         4
    used                4
  SPMS forwarded        33
Serial0/0
  NAKs forwarded        2
  NAKs retransmitted    2
  NCFs received         4
  RDATA received        2
  RDATA frags received  6
  SPMS received         33
    used                33
```

The following is sample output of the **show ip pgm router** command with the **state verbose** keywords. The timer associated with each session is an idle timer; the TSI state is deleted when this timer expires. The measured loss rates are indicated as follows:

link_lr : worst reported link loss rate

path_lr : worst reported path loss rate

receiver_lr : worst reported receiver loss rate

cr_lead: sequence number associated with worst receiver loss rate

cr_worst_rec: IP address that reported worst loss rate

```
Router# show ip pgm router state verbose
```

```
TSI          Group          Neighbour      TGSIZE
0A0700C85555-1000 227.7.7.7      rpf/source     N/A           00:04:25
(link_lr 7%, path_lr 4%, receiver_lr 10%
cr_lead 6256421, cr_worst_rec 134.45.0.126)
```

The following example shows state after receivers have reported loss of certain packets. NAKs have been received for each of the two sessions above. After the loss, the router has state for the lost packets. The sqn 1990 indicates that a receiver lost a packet with sequence number 1990 and is requesting that it be resent.

```
Router# show ip pgm router state verbose
```

```
TSI          Group          Neighbour      TGSIZE
0A0700C85555-1000 227.7.7.7      rpf/source     N/A           00:04:55
  sqn          1990          age           4 ELIM TMR
  Ethernet1/0/0
  sqn          1991          age           5 (anticipated)
0A0700C85555-2000 234.4.3.2      rpf/source     16           00:04:55
  sqn (        125, 7) age           10
  Serial5/0 prty # 7
```

■ **show ip pgm router**

For the selective TSI, the output shows re-send state for sequence number 1990. This was created by a NAK received on Ethernet1/0/0. ELIM TMR indicates that the state is currently eliminating and any new NAKs for this sequence number will not be forwarded.

State shown for sequence 1991 is anticipated state, indicating that it was created by a NAK confirmation (NCF) for a NAK sent by some other PGM router with the same PGM upstream neighbor as this router.

For the TSI with parity, the state shown was created by a parity NAK for 7 packets of the Transmission Group 125. This was received on Serial5/0, #7 indicates that 7 parity packets must be forwarded out this interface.

Related Commands

Command	Description
clear ip pgm router	Clears PGM traffic statistics.
ip pgm router	Enables PGM Router Assist and thereby allows PGM to operate more efficiently on the router.