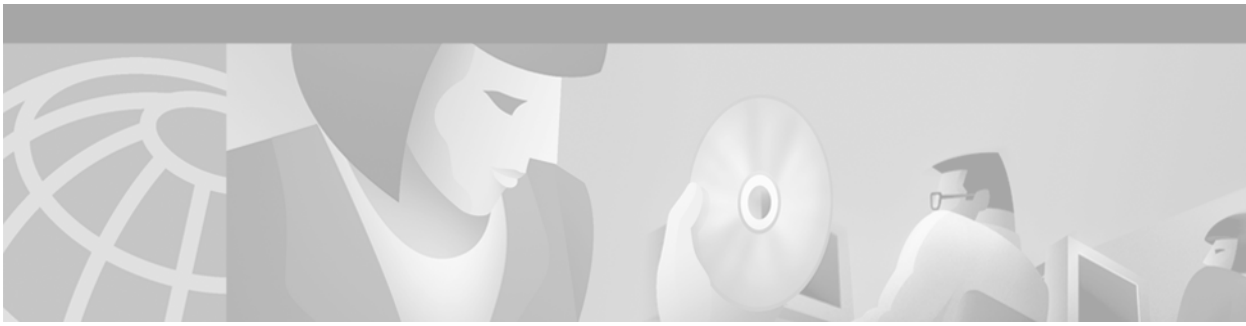

IP Multicast Tools Commands

Use the commands in this chapter to configure and use IP multicast tools such as Multicast Routing Monitor (MRM), mrinfo, mstat, and mtrace. For configuration information and examples of IP multicast tools, refer to the "Using IP Multicast Tools" chapter of the *Cisco IOS IP Configuration Guide*.

beacon

To change the frequency, duration, or scope of beacon messages that the Manager sends to Test Senders and Test Receivers during a Multicast Routing Monitor (MRM) test, use the **beacon** command in MRM manager configuration mode. To restore the default settings, use the **no** form of this command.

beacon [**interval** *seconds*] [**holdtime** *seconds*] [**ttl** *ttl-value*]

no beacon [**interval** *seconds*] [**holdtime** *seconds*] [**ttl** *ttl-value*]

Syntax Description

interval *seconds*	(Optional) Specifies the frequency of beacon messages (in seconds). The range is from 1 to 1800. By default, beacon messages are sent at an interval of 60 seconds, meaning that one beacon message is sent every 60 seconds.
holdtime *seconds*	(Optional) Specifies the length of the test period (in seconds). The Test Sender and Test Receiver are respectively sending and receiving test data constantly during the hold time. The range is from 1800 to 4294967295. By default, the duration of a test period is 86400 seconds (1 day).
ttl *ttl-value*	(Optional) Specifies the time-to-live (TTL) value of the beacon messages. The range is from 1 to 255. By default, the TTL for beacon messages is 32 hops.

Command Default

Beacon messages are sent at an interval of 60 seconds. The duration of a test period is 86400 seconds (1 day). The TTL for beacon messages is 32 hops.

Command Modes

MRM manager configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The beacon message functions like a keepalive message. The Manager multicasts beacon messages to the Test Sender and Test Receiver. Beacon messages include the sender requests and receiver requests to start the test, thus providing redundancy in case the Test Sender or Test Receiver goes down.

Examples

The following example shows how to customize the Manager to send beacon messages every 30 minutes (1800 seconds), for a test period of 12 hours (43,200 seconds), with a TTL of 40 hops:

```
ip mrm manager test
 beacon interval 1800 holdtime 43200 ttl 40
```

Related Commands

Command	Description
manager	Specifies that an interface is the Manager for MRM, and specifies the multicast group address the Test Receiver will listen to.

clear ip mrm status-report

To clear the Multicast Routing Monitor (MRM) status report cache, use the **clear ip mrm status-report** command in privileged EXEC mode.

clear ip mrm status-report [*ip-address*]

Syntax Description

ip-address	(Optional) IP address of the Test Receiver for which to clear status reports from the MRM status report cache.

Command Default

If no IP address is specified for the optional *ip-address* argument, all status reports are cleared from the MRM status report cache.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use the **clear ip mrm status-report** command to clear the MRM status report cache.

Use the **clear ip mrm status-report** command with the *ip-address* argument to clear only the status reports sent by the Test Receiver at the specified IP address. If no IP address is specified for the optional *ip-address* argument, all status reports are cleared from the MRM status report cache.

Use the **show ip mrm status-report** to display the status reports in the MRM status report cache.

Examples

The following example shows how to clear status reports sent by a specific Test Receiver from the MRM status report cache. In this example, the status reports sent by the Test Receiver at 172.16.0.0 are cleared from the MRM status report cache.

```
Router# clear ip mrm status-report 172.16.0.0
```

Related Commands

Command	Description
show ip mrm status-report	Displays the status reports in the MRM status report cache.

ip mrm

To configure an interface to operate as a Test Sender or Test Receiver, or both, for Multicast Routing Monitor (MRM), use the **ip mrm** command in interface configuration mode. To remove the interface as a Test Sender or Test Receiver, use the **no** form of this command.

ip mrm {**test-sender** | **test-receiver** | **test-sender-receiver**}

no ip mrm

Syntax Description

test-sender	Configures the interface to operate as a Test Sender.
test-receiver	Configures the interface to operate as a Test Receiver.
test-sender-receiver	Configures the interface to operate as both a Test Sender and Test Receiver (for different groups).

Command Default

No interface is configured to operate as a Test Sender or a Test Receiver, or both, for MRM.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The Test Sender and Test Receiver can be either a router or a host.

If a router (or host) belongs to more than one test group, it can be a Test Sender for one group and a Test Receiver for the other group. It, however, cannot be the Test Sender and Test Receiver for the same group.

Examples

The following example shows how to configure an interface to operate as a Test Sender. In this example, Ethernet interface 0 is configured to operate as a Test Sender.

```
interface ethernet 0
 ip mrm test-sender
```

Related Commands

Command	Description
receivers	Establishes Test Receivers for MRM.
senders	Establishes Test Senders for MRM.

ip mrm accept-manager

To configure a Test Sender or Test Receiver to accept requests only from Managers that pass an access list, use the **ip mrm accept-manager** command in global configuration mode. To remove the restriction, use the **no** form of this command.

ip mrm accept-manager *access-list* [**test-sender** | **test-receiver**]

no ip mrm accept-manager *access-list*

Syntax Description

access-list	Number or name of an IP access list used to restrict Managers.
test-sender	(Optional) Applies the access list only to the Test Sender.
test-receiver	(Optional) Applies the access list only to the Test Receiver.

Command Default

Test Senders and Test Receivers respond to all Managers.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use this command to control which Managers a Test Sender or Test Receiver must respond to.

If neither the **test-sender** nor **test-receiver** keyword is configured, the access list applies to both.

Examples

The following example shows how to configure a Test Sender to respond only to Managers that pass an access list. In this example, the Test Sender is configured to respond only to the Managers that passed the ACL named supervisor.

```
ip mrm accept-manager supervisor
!
ip access-list standard supervisor
 remark Permit only the Manager from the Central Office
 permit 172.18.2.4
!
```

Related Commands

Command	Description
ip mrm	Configures an interface to operate as a Test Sender or Test Receiver, or both, for MRM.

ip mrm manager

To specify the Multicast Routing Monitor (MRM) test to be created or modified and enter MRM manager configuration mode, use the **ip mrm manager** command in global configuration mode. To remove the test, use the **no** form of this command.

ip mrm manager *test-name*

no ip mrm manager *test-name*

Syntax Description

test-name	Name of the MRM test to be created or modified.

Command Default

No MRM tests are configured.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use the **ip mrm manager** command to specify the name of the MRM test to be created or modified and enter MRM manager configuration mode where you specify the parameters of the MRM test.

Examples

The following example shows how to enter MRM manager configuration mode for the MRM test named test1:

```
Router(config)# ip mrm manager test1
Router(config-mrm-manager)#
```

Related Commands

Command	Description
mrm	Starts or stops an MRM test.
show ip mrm manager	Displays test information for MRM.

manager

To specify that an interface is the Manager for Multicast Routing Monitor (MRM), and to specify the multicast group address the Test Receiver will listen to, use the **manager** command in MRM manager configuration mode. To remove the Manager or group address, use the **no** form of this command.

manager *interface-type interface-number* **group** *ip-address*

no manager *interface-type interface-number* **group** *ip-address*

Syntax Description

interface-type interface-number	Interface type and number of the Manager. The IP address associated with this interface is the source address of the Manager.
group *ip-address*	Specifies the IP multicast group address that the Test Receiver will listen to.

Defaults

There is no MRM Manager.

Command Modes

MRM manager configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command identifies the interface that acts as the Manager, and therefore is required in order to run MRM.

Examples

The following example shows how to configure Ethernet interface 0 as the Manager and the Test Receiver to listen to multicast group 239.1.1.1:

```
ip mrm manager test1
 manager ethernet 0 group 239.1.1.1
```

Related Commands

Command	Description
beacon (multicast routing monitor)	Changes the frequency, duration, or scope of beacon messages that the Manager sends to Test Senders and Test Receivers during an MRM test.
ip mrm accept-manager	Configures a Test Sender or Test Receiver to accept requests only from Managers that pass an access list.
show ip mrm manager	Displays test information for MRM.

mrinfo

To query which neighboring multicast routers are "peering" with the local router, use the **mrinfo** command in EXEC mode.

mrinfo [*host-name* | *host-address*] [*source-address* | *interface*]

Syntax Description

host-name | *host-address*	(Optional) Queries the Domain Name System (DNS) name or IP address of the multicast router. If omitted, the router queries itself.
source-address	(Optional) Source address used on mrinfo requests. If omitted, the source is based on the outbound interface for the destination.
interface	(Optional) Source interfaceused on mrinfo requests. If omitted, the source is based on the outbound interface for the destination.

Command Modes

EXEC

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

The mrinfo command is the original tool of the multicast backbone (MBONE) to determine which neighboring multicast routers are peering with a multicast router. Cisco routers have supported responding to mrinfo requests since Cisco IOS Release 10.2.

Now you can query a multicast router using this command. The output format is identical to the mrouted version of Distance Vector Multicast Routing Protocol (DVMRP). (The mrouted software is the UNIX software that implements DVMRP.)

Examples

The following is sample output of the **mrinfo** command:

```
Router # mrinfo

192.31.7.37 (barrnet-gw.cisco.com) [version cisco 11.1] [flags: PMSA]:
  192.31.7.37 -> 192.31.7.34 (sj-wall-2.cisco.com) [1/0/pim]
  192.31.7.37 -> 192.31.7.47 (dirtylab-gw-2.cisco.com) [1/0/pim]
  192.31.7.37 -> 192.31.7.44 (dirtylab-gw-1.cisco.com) [1/0/pim]
  131.119.26.10 -> 131.119.26.9 (su-pr2.bbnplanet.net) [1/32/pim]
```

The flags indicate the following:

- P: prune-capable
- M: mtrace-capable
- S: SNMP-capable
- A: Auto-RP-capable

mrm

To start or stop a Multicast Routing Monitor (MRM) test, use the **mrm** command in privileged EXEC mode.

mrm *test-name* {**start** | **stop**}

Syntax Description

test-name	Name of the MRM test to start or stop.
start	Starts the MRM test specified for the *test-name* argument.
stop	Stops the MRM test specified for the *test-name* argument.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

You must use this command to run an MRM test. When the test runs, the Test Sender sends User Datagram Protocol (UDP) or UDP/Real-Time Transport Protocol (RTP) packets (depending on the **senders** command) to the Test Receiver.

Examples

The following example shows how to start an MRM test. In this example, the MRM test named test1 is started.

```
Router# mrm test1 start
```

Related Commands

Command	Description
ip mrm manager	Identifies an MRM test and enters the mode in which you specify the test parameters.
senders	Configures Test Sender parameters used in MRM.
show ip mrm status-report	Displays the status reports in the MRM status report cache.

mstat

To display IP multicast packet rate and loss information, use the **mstat** command in user EXEC mode.

mstat {*source-name* | *source-address*} [*destination-name* | *destination-address*] [*group-name* | *group-address*]

Syntax Description

source-name | *source-address*	Domain Name System (DNS) name or the IP address of the multicast-capable source.
destination-name | *destination-address*	(Optional) DNS name or address of the destination. If omitted, the command uses the system at which the command is typed.
group-name | *group-address*	(Optional) DNS name or multicast address of the group to be displayed. Default address is 224.2.0.1 (the group used for multicast backbone [MBONE] Audio).

Command Modes

User EXEC

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

If no arguments are entered, the router will interactively prompt you for them.

This command is a form of UNIX mtrace that reports packet rate and loss information.

Examples

The following is sample output from the **mstat** command:

```
Router> mstat lwei-home-ss2 171.69.58.88 224.0.255.255

Type escape sequence to abort.
Mtrace from 171.69.143.27 to 171.69.58.88 via group 224.0.255.255
>From source (lwei-home-ss2.cisco.com) to destination (lwei-ss20.cisco.com)
Waiting to accumulate statistics......
Results after 10 seconds:

  Source        Response Dest    Packet Statistics For    Only For Traffic
171.69.143.27    171.69.62.144    All Multicast Traffic     From 171.69.143.27
     |       __/  rtt 48   ms   Lost/Sent = Pct  Rate     To 224.0.255.255
     v      /     hop 48   ms   ---------------------     --------------------
171.69.143.25   lwei-cisco-isdn.cisco.com
     |     ^      ttl   1
     v     |      hop 31   ms    0/12 = 0%      1 pps    0/1 = --%  0 pps
171.69.121.84
171.69.121.45   eng-frmt12-pri.cisco.com
     |     ^      ttl   2
     v     |      hop -17  ms    -735/12 = --%      1 pps    0/1 = --%  0 pps
171.69.121.4
171.69.5.27     eng-cc-4.cisco.com
     |     ^      ttl   3
     v     |      hop -21  ms    -678/23 = --%      2 pps    0/1 = --%  0 pps
171.69.5.21
```

```
171.69.62.130   eng-ios-2.cisco.com
     |     ^      ttl   4
     v     |      hop 5    ms    605/639 = 95%      63 pps    1/1 = --%  0 pps
171.69.62.144
171.69.58.65    eng-ios-f-5.cisco.com
     |      \__   ttl   5
     v         \  hop 0    ms        4         0 pps           0    0 pps
171.69.58.88    171.69.62.144
  Receiver      Query Source
```

Table 32 describes the significant fields shown in the display.

Table 32 mstat Field Descriptions

Field	Description
Source	Traffic source of packet.
Response Dest	Place where the router sends the results of the **mstat** command.
ttl	Number of hops required from the traffic source to the current hop.
hop	Number of milliseconds of delay.
Only For Traffic From ... 0/2	0 packets dropped out of 2 packets received. If, for example, –2/2 was indicated, then there are 2 extra packets, which could indicate a loop condition.

Related Commands

Command	Description
mtrace	Traces the path from a source to a destination branch for a multicast distribution tree.

mtrace

To trace the path from a source to a destination branch for a multicast distribution tree, use the **mtrace** user command in EXEC mode.

mtrace {*source-name* | *source-address*} [*destination-name* | *destination-address*] [*group-name* | *group-address*]

Syntax Description

source-name | *source-address*	Domain Name System (DNS) name or the IP address of the multicast-capable source. This is a unicast address of the beginning of the path to be traced.
destination-name | *destination-address*	(Optional) DNS name or address of the unicast destination. If omitted, the mtrace starts from the system at which the command is typed.
group-name | *group-address*	(Optional) DNS name or multicast address of the group to be traced. Default address is 224.2.0.1 (the group used for multicast backbone [MBONE] Audio). When address 0.0.0.0 is used, the software invokes a weak **mtrace**. A weak **mtrace** is one that follows the RPF path to the source, regardless of whether any router along the path has multicast routing table state.

Command Modes

User EXEC

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

The trace request generated by the **mtrace** command is multicast to the multicast group to find the last hop router to the specified destination. The trace then follows the multicast path from destination to source by passing the mtrace request packet via unicast to each hop. Responses are unicast to the querying router by the first hop router to the source. This command allows you to isolate multicast routing failures.

If no arguments are entered, the router will interactively prompt you for them.

This command is identical in function to the UNIX version of mtrace.

Examples

The following is sample output from the **mtrace** command:

```
Router> mtrace 171.69.215.41 171.69.215.67 239.254.254.254

Type escape sequence to abort.
Mtrace from 171.69.215.41 to 171.69.215.67 via group 239.254.254.254
From source (?) to destination (?)
Querying full reverse path...
 0  171.69.215.67
-1  171.69.215.67 PIM  thresh^ 0  0 ms
-2  171.69.215.74 PIM  thresh^ 0  2 ms
-3  171.69.215.57 PIM  thresh^ 0  894 ms
-4  171.69.215.41 PIM  thresh^ 0  893 ms
-5  171.69.215.12 PIM  thresh^ 0  894 ms
-6  171.69.215.98 PIM  thresh^ 0  893 ms
```

Table 33 describes the significant fields shown in the display.

Table 33 mtrace Field Descriptions

Field	Description
Mtrace from 171.69.215.41 to 171.69.215.67 via group 239.254.254.254	Name and address of source, destination, and group for which routes are being traced.
-3 171.69.215.57	Hops away from destination (–3) and address of intermediate router.
PIM thresh^ 0	Multicast protocol in use on this hop, and time-to-live (TTL) threshold.
893 ms	Time taken for trace to be forwarded between hops.

Related Commands

Command	Description
mstat	Displays IP multicast packet rate and loss information.

receivers

To establish Test Receivers for Multicast Routing Monitor (MRM) tests or modify the parameters of Test Receivers, use the **receivers** command in MRM manager configuration mode. To restore the default values, use the **no** form of this command.

Form of the Command to Establish Test Receivers

receivers *access-list* **sender-list** *access-list* [*packet-delay*]

no receivers *access-list*

Form of the Command to Modify the Parameters of Test Receivers

receivers *access-list* [**window** *seconds*] [**report-delay** *seconds*] [**loss** *percentage*] [**no-join**] [**monitor** | **poll**]

no receivers *access-list*

Syntax Description

access-list	IP named or numbered access list that establishes the Test Receivers. Only these Test Receivers are subject to the other keywords and arguments specified in this command.
sender-list *access-list*	Specifies the sources that the Test Receiver should monitor. If the named or numbered access list matches any access list specified in the **senders** command, the associated **packet-delay** *milliseconds* keyword and argument of that **senders** command are used in this command. Otherwise, the *packet-delay* argument is required in this **receivers** command.
packet-delay	(Optional) Specifies the delay between test packets (in milliseconds). The range is from 50 to 10000. If the **sender-list** access list matches any access list specified in a **senders** command, the associated **packet-delay** *milliseconds* keyword and argument of that **senders** command are used in this command. Otherwise, the *packet-delay* argument is required in this **receivers** command.
window *seconds*	(Optional) Specifies the duration (in seconds) of a test period. This is a sliding window of time in which the packet count is collected, so that the loss percentage can be calculated. The range is from 1 to 10. The default is 5 seconds.
report-delay *seconds*	(Optional) Specifies the delay (in seconds) between status reports. The delay prevents multiple Test Receivers from sending status reports to the Manager at the same time for the same failure. This value is relevant only if there are multiple Test Receivers. The range is from 1 to 60. The default is 1 second.
loss *percentage*	(Optional) Specifies the threshold percentage of packet loss required before a status report is triggered. The range is from 0 to 100. The default is 0 percent, which means that a status report is sent for any packet loss. (This value is not applied to packet duplication; a fault report is sent for any duplicated packets.) Loss percentage calculation is explained in the "Usage Guidelines" section of this command.

no-join	(Optional) Specifies that the Test Receiver does not join the monitored group. The default is that the Test Receiver joins the monitored group.
monitor | **poll**	(Optional) Specifies whether the Test Receiver monitors the test group or polls for receiver statistics. The **monitor** keyword means the Test Receiver reports only if the test criteria are met. The **poll** keyword means the Test Receiver sends status reports regularly, whether test criteria are met or not. The default is the behavior set with the **monitor** keyword.

Command Default

No Test Receivers are configured for MRM tests.

Command Modes

MRM manager configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command is required for MRM to work; the **receivers** *access-list* and **sender-list** *access-list* keyword-argument pairs must be specified.

Note The Cisco IOS CLI parser accepts the command entered without the required **sender-list** *access-list* keyword-argument pair. This keyword-argument pair, however, is not optional. For an MRM test to work, you must specify the sources that the Test Receiver should monitor using the **sender-list** keyword and *access-list* argument.

Optionally, you can use the **receivers** command to modify the parameters for Test Receivers.

Loss percentage is calculated based on the **packet-delay** value of the **senders** command, which defaults to 200 milliseconds, or 5 packets per second. If the **window** keyword defaults to 5 seconds, then the Test Receiver expects 5 packets per second for 5 seconds = 25 packets. If the Test Receiver receives only 15 packets, then 25 – 15 = 10 lost packets. Lost packets divided by packets expected equals loss percentage; 10/25 equals a loss percentage of 40 percent.

Examples

The following example shows how to establish a Test Receiver for an MRM test:

```
ip mrm manager test1
 manager Ethernet0/0 group 239.1.1.1
 senders 1
 receivers 2 sender-list 1
!
access-list 1 permit 10.1.1.2
access-list 2 permit 10.1.4.2
!
```

Related Commands

Command	Description
senders	Establishes Test Senders for MRM.

senders

To configure Test Sender parameters used for a Multicast Routing Monitor (MRM) test, use the **senders** command in MRM manager configuration mode. To restore the default settings, use the **no** form of this command.

senders *access-list* [**packet-delay** *milliseconds*] [**rtp** | **udp**] [**target-only** | **all-multicasts** | **all-test-senders**] [*proxy-src*]

no senders *access-list*

Syntax Description

access-list	IP named or numbered access list that defines which Test Senders are involved in the test and which Test Senders these parameters apply to.
packet-delay *milliseconds*	(Optional) Specifies the delay between test packets (in milliseconds). The range is from 50 to 10000. The default is 200 milliseconds, which results in 5 packets per second.
rtp | **udp**	(Optional) Specifies the encapsulation of test packets, either Real-Time Transport Protocol (RTP)-encapsulated or User Datagram Protocol (UDP)-encapsulated. By default, test packets are RTP-encapsulated.
target-only	(Optional) Specifies that test packets are sent out on the targeted interface only (that is, the interface with the IP address that is specified in the Test Sender request target field). By default, test packets are sent out on all interfaces that are enabled with IP multicast.
all-multicasts	(Optional) Specifies that the test packets are sent out on all interfaces that are enabled with IP multicast. This is the default method for sending test packets.
all-test-senders	(Optional) Specifies that test packets are sent out on all interfaces that have test-sender mode enabled. By default, test packets are sent out on all interfaces that are enabled with IP multicast.
proxy-src	(Optional) Source IP address for which the Test Sender will proxy test packets. Enter an address if you want to test, for a specific source, whether the multicast distribution tree is working.

Command Default

No test senders are configured to be involved in MRM tests.

Command Modes

MRM manager configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use this command to specify which Test Senders are involved in the test and are affected by these parameters.

Examples

The following example shows how to configure a Test Sender for an MRM test:

```
ip mrm manager test1
 manager Ethernet0/0 group 239.1.1.1
 senders 1
 receivers 2 sender-list 1
!
access-list 1 permit 10.1.1.2
access-list 2 permit 10.1.4.2
```

Related Commands

Command	Description
receivers	Establishes Test Receivers for MRM.

show ip mrm interface

To display Multicast Routing Monitor (MRM) information related to interfaces, use the **show ip mrm interface** command in user EXEC or privileged EXEC mode.

show ip mrm interface [*type number*]

Syntax Description

type number	(Optional) Interface type and number for which to display MRM interface information.

Command Default

If no interface is specified for the *type* and *number* arguments, information about all interfaces participating in MRM is displayed.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use this command to display which interfaces are participating in MRM, in which roles, and whether the interfaces are up or down.

Examples

The following is sample output from the **show ip mrm interface** command:

```
Router# show ip mrm interface

Interface           Address         Mode                Status
Ethernet0           10.0.0.1        Test-Sender         Up
Ethernet1           10.0.0.10       Test-Receiver       Up
```

Table 34 describes the fields shown in the display.

Table 34 show ip mrm interface Field Descriptions

Field	Description
Interface	List of interfaces on this router that serve as a Test Sender or Test Receiver.
Address	IP address of the interface.
Mode	Role that the interface plays in MRM, either Test Sender or Test Receiver.
Status	Status of the interface.

Related Commands

Command	Description
ip mrm	Configures an interface to operate as a Test Sender or Test Receiver, or both, for MRM.

show ip mrm manager

To display information about a Multicast Routing Monitor (MRM) test, use the **show ip mrm manager** command in user EXEC or privileged EXEC mode.

show ip mrm manager [*test-name*]

Syntax Description

test-name	(Optional) Name of the MRM test for which to display information.

Command Default

If no test name is specified for the *test-name* argument, information about all Managers is displayed.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use this command to display status information and the parameters configured for an MRM test.

Examples

The following is sample output from the **show ip mrm manager** command executed at two different times:

```
Router# show ip mrm manager test

Manager:test/10.0.0.0 is running, expire:1d00h
  Beacon interval/holdtime/ttl:60/86400/32
  Group:239.1.2.3, UDP port test-packet/status-report:16384/65535
  Test senders:
    10.0.0.1 /Ack
  Test receivers:
    10.0.0.2 /Ack

Router# show ip mrm manager test

Manager:test/10.0.0.0 is not running
  Beacon interval/holdtime/ttl:60/86400/32
  Group:239.1.2.3, UDP port test-packet/status-report:16384/65535
  Test senders:
    10.0.0.1
  Test receivers:
    10.0.0.2
```

Table 35 describes the fields shown in the display.

Table 35 show ip mrm manager Field Descriptions

Field	Description
Manager	Status of the test.
Beacon interval/holdtime/ttl	The interval at which beacon messages are sent (Beacon interval), the duration of the test period (holdtime), and the time-to-live value of beacon messages. **Note** Beacon parameters are controlled with the **beacon** command. By default, beacon messages are sent at an interval of 60 seconds; the duration of the test period is 86400 seconds (1 day); and the time-to-live of beacon messages is 32 hops.
Group	IP multicast group that the Test Receiver will listen to, as configured by the **manager** command.
UDP port test-packet/status-report	User Datagram Protocol (UDP) port number to which test packets are sent by a Test Sender and status reports are sent by a Test Receiver. **Note** The UDP port numbers to which test packets are sent by a Test Sender and status reports are sent by a Test Receiver are controlled with the **udp-port** command. By default, the Test Sender uses UDP port number 16834 to send test packets, and the Test Receiver uses UDP port number 65535 to send status reports.
Test senders	IP address of Test Senders.
Test receivers	IP address of Test Receivers.

Related Commands

Command	Description
beacon	Changes the frequency, duration, or scope of beacon messages that the Manager sends to the Test Sender and Test Receiver.
ip mrm manager	Specifies the name of an MRM test to be created or modified, and enters MRM manager configuration mode.
manager	Specifies that an interface is the Manager for MRM, and specifies the multicast group address the Test Receiver will listen to.
udp-port	Changes the UDP port numbers to which the Test Sender sends test packets or the Test Receiver sends status reports.

show ip mrm status-report

To display the status reports in the Multicast Routing Monitor (MRM) status report cache, use the **show ip mrm status-report** command in user EXEC or privileged EXEC mode.

show ip mrm status-report [*ip-address*]

Syntax Description

ip-address	(Optional) IP address of a Test Receiver for which to display status reports.

Command Default

If no IP address is specified for the optional *ip-address* argument, all status reports in the MRM status report cache are displayed.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use the **show ip mrm status-report** command during your MRM test period to learn if any errors are reported. The Manager immediately displays error reports and sends error reports, if any, to the circular status report cache. The cache holds up to 1024 lines, with one line for each error report.

No errors reported indicates that the Test Receiver is receiving test packets without loss or duplicates from the Test Sender.

Use the **show ip mrm status-report** command with the optional *ip-address* argument to restrict the output to display only status reports sent by the Test Receiver at the specified IP address. If no IP address is specified for the optional *ip-address* argument, all status reports in the MRM status report cache are displayed.

Use the **clear ip mrm status-report** command to clear the MRM status report cache.

Examples

The following is sample output from the **show ip mrm status-report** command:

```
Router# show ip mrm status-report

IP MRM status report cache:
Timestamp        Manager         Test Receiver   Pkt Loss/Dup (%)      Ehsr
*Apr 20 07:36:08 10.0.0.0        10.0.0.1        5            (20%)    0
*Apr 20 07:36:09 10.0.0.0        10.0.0.1        10           (40%)    0
*Apr 20 07:36:10 10.0.0.0        10.0.0.1        15           (60%)    0
```

Table 36 describes the fields shown in the display.

Table 36 show ip mrm status-report Field Descriptions

Field	Description
Timestamp	Time when the status report arrived in the cache. Month and date, hours:minutes:seconds.
Manager	IP address of the Manager.
Test Receiver	IP address of the Test Receiver.
Pkt Loss/Dup	Number of packets lost or duplicated.
(%)	Percentage of packets lost or duplicated. Loss percentage is calculated based on the **packet-delay** value of the **senders** command, which defaults to 200 milliseconds (or 5 packets per second). If the default for the **window** keyword (5 seconds) is not changed, then the Test Receiver expects 5 packets per second for 5 seconds = 25 packets. If the Test Receiver receives only 15 packets, then 25 – 15 = 10 lost packets. Lost packets divided by packets expected equals loss percentage; 10/25 equals a loss percentage of 40 percent. A negative percentage indicates duplicate packets were received. If the packet loss reaches 100 percent, the Test Receiver will not send periodic reports until the packet loss decreases to less than 100 percent.
Ehsr	Extended highest sequence number received from Real-Time Transport Protocol (RTP).

Related Commands

Command	Description
clear ip mrm status-report	Clears the MRM status report cache.

udp-port

To change the User Datagram Protocol (UDP) port numbers to which a Test Sender sends test packets or a Test Receiver sends status reports during Multicast Routing Monitor (MRM) tests, use the **udp-port** command in MRM manager configuration mode. To restore the default settings, use the **no** form of this command.

udp-port [**test-packet** *port-number*] [**status-report** *port-number*]

no udp-port

Syntax Description

test-packet *port-number*	(Optional) Specifies the UDP port number to which test packets are sent by a Test Sender. The port number must be even if the packets are Real-Time Transport Protocol (RTP)-encapsulated. The range is from 16384 to 65535. By default, the Test Sender uses UDP port number 16834 to send test packets.
status-report *port-number*	(Optional) Specifies the UDP port number to which status reports are sent by a Test Receiver. The port number must be odd if the packets are RTP Control Protocol (RTCP)-encapsulated. The range is from 16834 to 65535. By default, the Test Receiver uses UDP port number 65535 to send status reports.

Command Default

Test Senders use UDP port number 16834 to send test packets, and Test Receivers use UDP port number 65535 to send status reports.

Command Modes

MRM manager configuration

Command History

Release	Modification
12.0(5)S	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

The following example shows how to change the UDP port to which test packets are sent by a Test Sender to UDP port number 20302:

```
ip mrm manager test
 udp-port test-packet 20302
```

Related Commands

Command	Description
ip mrm	Configures an interface to operate as a Test Sender or Test Receiver, or both, for MRM.