

# Multicast Distributed Switching

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## Description

Prior to multicast distributed switching (MDS), IP multicast traffic was always switched at the Route Processor (RP) in the Route Switch Processor (RSP)-based platforms. With Cisco IOS Release 11.2 GS, IP multicast traffic can be distributed switched on RSP-based platforms with VIPs. Furthermore, MDS is the only multicast switching method on the Cisco 12000 Gigabit Switched Router (GSR), starting with Cisco IOS Release 11.2(11) GS.

Switching multicast traffic at the RP had disadvantages:

- The load on the RP increased. This affected important route updates and calculations (for BGP, among others) and could stall the router if the multicast load was significant.
- The net multicast performance was limited to what a single RP could switch.

MDS solves these problems by performing distributed switching of multicast packets received at the line cards (VIPs in the case of RSP, and line cards in the case of GSR). The line card is the interface card that houses the VIPs (in the case of RSP) and the GSR line card (in the case of GSR). MDS is accomplished using a forwarding data structure called a Multicast Forwarding Information Base (MFIB), which is a subset of the routing table. A copy of MFIB runs on each line card and is always kept up to date with the RP's MFIB table.

In the case of RSP, packets received on non-VIP IPs are switched by the RP.

MDS can work in conjunction with Cisco Express Forwarding (CEF), unicast distributed fast switching (DFS), or flow switching.

## Benefits

The multicast switching load is kept off the RP, improving the performance of the router.

## Platforms

This feature is supported on these platforms:

- Cisco 7500
- Cisco 12000 Gigabit Switch Router (GSR)

## Configuration Tasks

This section describes the tasks to configure MDS. The first task is required.

- Enable MDS
- Monitor and Maintain MDS

### Enable MDS

To enable MDS, you must enable it globally and on at least one interface because MDS is an attribute of the interface. Perform the following tasks beginning in global configuration mode:

Task	Command
<b>Step 1</b> Enable MDS globally.	<b>ip multicast-routing distributed</b>
<b>Step 2</b> Configure an interface.	<b>interface</b> <i>type number</i>
<b>Step 3</b> Enable distributed switching on the RSP. (This step is required on the RSP platform only.)	<b>ip route-cache distributed</b>
<b>Step 4</b> Enable MDS on the interface.	<b>ip mroute-cache distributed</b>
<b>Step 5</b> Repeat Steps 2 through 4 for each interface that you want to perform MDS.	

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**Note** When you enable an interface to perform distributed switching of incoming multicast packets, you are configuring the physical interface, not the logical interface (subinterface). All subinterfaces are included in the physical interface.

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### Monitor and Maintain MDS

To maintain MDS on the line cards, perform the following task in EXEC mode:

Task	Command
Clear the line card's MFIB table and resynchronize with the RP.	<b>clear ip mds forwarding</b>

To maintain MDS on the RP, perform the following tasks in EXEC mode:

Task	Command
Clear multicast routes and counts.	<b>clear ip mroute</b> <i>{*   group [source]}</i>
Clear all packet counts on the line cards.	<b>clear ip pim interface count</b>

To monitor MDS on the line cards, perform the following tasks in EXEC mode. Remember that to reach a line card's console, enter **attach** *slot#*, using the slot number where the line card resides.

Task	Command
Display the MFIB table, forwarding information, related flags, and counts.	<b>show ip mds forwarding</b> <i>[group-address]</i> <i>[source-address]</i>
Display a summary of the MFIB.	<b>show ip mds summary</b>

To monitor MDS on the RP, perform the following tasks in EXEC mode:

<b>Task</b>	<b>Command</b>
Display switching statistics or line card statistics for MDS.	<b>show ip mds stats</b> [switching   linecard]
Display the status of MDS interfaces.	<b>show ip mds interface</b>
Display switching counts for unicast distributed fast switching and other fast switching statistics.	<b>show ip pim interface</b> [type number] count
Display the contents of the IP fast-switching cache.	<b>show ip mcache</b> [group [source]]
Display numbers of packets that were process switched, fast switched, and distributed switched.	<b>show interface stats</b>

## Configuration Example

The following example enables MDS. The command **ip route-cache distributed** is needed on the RSP only, not on the GSR.

```
ip multicast-routing distributed
interface pos 1/0/0
ip route-cache distributed
ip mroute-cache distributed
```

## Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 11.2 command references.

- **clear ip mds forwarding**
- **clear ip pim interface count**
- **ip mroute-cache**
- **ip multicast-routing**
- **show interface stats**
- **show ip mcache**
- **show ip mds forwarding**
- **show ip mds interface**
- **show ip mds stats**
- **show ip mds summary**
- **show ip pim interface count**

### clear ip mds forwarding

To clear all routes from a line card's MFIB table and resynchronize it with the RP, use the **clear ip mds forwarding** EXEC command.

```
clear ip mds forwarding
```

#### Syntax Description

This command has no arguments or keywords.

#### Command Mode

EXEC

#### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on a line card of a Cisco 7500 or Cisco 12000.

#### Example

The following example clears the line card's MFIB table:

```
clear ip mds forwarding
```

#### Related Commands

**clear ip pim interface count**

## clear ip pim interface count

To clear all line card counts or packet counts, use the **clear ip pim interface count** EXEC command.

**clear ip pim interface count**

### Syntax Description

This command has no arguments or keywords.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on an RP to delete all multicast distributed switching (MDS) statistics for the entire router.

### Example

The following example clears all the line card packets counts:

```
clear ip pim interface count
```

### Related Commands

**clear ip mds forwarding**

## ip mroute-cache

To configure IP multicast fast switching or multicast distributed switching (MDS), use the **ip mroute-cache** interface configuration command. To disable either of these features, use the **no** form of this command.

```
ip mroute-cache [distributed]  
no ip mroute-cache [distributed]
```

### Syntax Description

**distributed** (Optional) Enables MDS on the interface. In the case of RSP, this keyword is optional; if it is omitted, fast switching occurs. On the GSR, this keyword is required because the GSR does only distributed switching.

### Default

On the RSP, IP multicast fast switching is enabled; MDS is disabled.  
On the GSR, MDS is disabled.

### Command Mode

Interface configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.0. The **distributed** keyword first appeared in Release 11.2(11) GS.

#### On the RSP

If multicast fast switching is disabled on an incoming interface for a multicast routing table entry, the packet will be sent at process level for all interfaces in the outgoing interface list.

If multicast fast switching is disabled on an outgoing interface for a multicast routing table entry, the packet is process level switched for that interface, but may be fast-switched for other interfaces in the outgoing interface list.

When multicast fast switching is enabled (like unicast routing), debug messages are not logged. If you want to log debug messages, disable fast switching.

If MDS is not enabled on an incoming interface that is capable of MDS, incoming multicast packets will not be distributed switched; they will be fast-switched at the RP as before. Also, if the incoming interface is not capable of MDS, packets will get fast-switched or process-switched at the RP as before.

If MDS is enabled on the incoming interface, but at least one of the outgoing interfaces cannot fast-switch, packets will be process-switched. So it is a good idea not to disable fast switching on any interface when MDS is enabled.

#### On the GSR

On the GSR, all interfaces should be configured for MDS because that is the only switching mode.

## Examples

The following example enables IP multicast fast switching on the interface:

```
ip mroute-cache
```

The following example disables IP multicast fast switching on the interface:

```
no ip mroute-cache
```

The following example enables MDS on the interface:

```
ip mroute-cache distributed
```

The following example disables MDS and IP multicast fast switching on the interface:

```
no ip mroute-cache distributed
```

## ip multicast-routing

To enable IP multicast routing or multicast distributed switching (MDS), use the **ip multicast-routing** global configuration command. To disable IP multicast routing and MDS, use the **no** form of this command.

```
ip multicast-routing [distributed]  
no ip multicast-routing
```

### Syntax Description

**distributed** (Optional) Enables MDS.

### Default

Disabled

### Command Mode

Global configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 10.0. The **distributed** keyword first appeared in Release 11.2(11) GS.

When IP multicast routing is disabled, the Cisco IOS software does not forward any multicast packets.

### Examples

The following example enables IP multicast routing:

```
ip multicast-routing
```

The following example disables IP multicast routing and MDS:

```
no ip multicast-routing
```

### Related Commands

You can use the master indexes or search online to find documentation of related commands.

**ip pim**

## show interface stats

To display numbers of packets that were process switched, fast switched, and distributed switched, use the **show interface stats EXEC** command.

**show interface** *type number* **stats**

### Syntax Description

*type number*            Interface type and number about which to display statistics.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.0.

Use this command on the RP.

### Sample Display

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

```
Router# show interface fddi 3/0/0 stats

Fddi3/0/0
  Switching path   Pkts In   Chars In   Pkts Out   Chars Out
    Processor      3459994  1770812197  4141096   1982257456
    Route cache    10372326  3693920448   439872   103743545
  Distributed cache 19257912  1286172104  86887377  1184358085
    Total          33090232  2455937453  91468345  3270359086
```

Table 1 describes the fields in the display.

**Table 1**    **Show Interface Stats Field Descriptions**

Field	Description
Fddi3/0/0	Interface for which information is shown.
Switching path	Column heading for the various switching paths below it.
Pkts In	Number of packets received in each switching mechanism.
Chars In	Number of characters received in each switching mechanism.
Pkts Out	Number of packets sent out each switching mechanism.
Chars Out	Number of characters sent out each switching mechanism.

## show ip mcache

To display the contents of the IP multicast fast-switching cache, use the **show ip mcache EXEC** command.

```
show ip mcache [group [source]]
```

### Syntax Description

*group* (Optional) Displays the fast-switching cache for the single group. The *group* argument can be either a Class D IP address or a DNS name.

*source* (Optional) If *source* is also specified, displays a single multicast cache entry. The *source* argument can be either a unicast IP address or a DNS name.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.0.

Use this command on the RP.

### Sample Displays

The following is sample output from the **show ip mcache** command. This entry shows a specific source (wrn-source 204.62.246.73) sending to the World Radio Network group (224.2.143.24).

```
Router> show ip mcache wrn wrn-source

IP Multicast Fast-Switching Cache
(204.62.246.73/32, 224.2.143.24), Fddi0, Last used: 00:00:00
Ethernet0      MAC Header: 01005E028F180000C1883D30800
Ethernet1      MAC Header: 01005E028F180000C1883D60800
Ethernet2      MAC Header: 01005E028F180000C1883D40800
Ethernet3      MAC Header: 01005E028F180000C1883D70800
```

Table 2 describes the significant fields in the display.

**Table 2 Show IP Mcache Field Descriptions**

Field	Description
204.62.246.73	Source address.
224.2.143.24	Destination address.
Fddi0	Incoming or expected interface on which the packet should be received.
Last used:	Latest time the entry was accessed for a packet that was successfully fast-switched. <ul style="list-style-type: none"> <li>“semi-fast” indicates that the first part of the outgoing interface list is fast switched and the rest of the list is process level switched.</li> <li>“mds” indicates multicast distributed switching is being used instead of the fast cache.</li> <li>“never” indicates the fast cache entry is not used (it is process switched).</li> </ul>

**Table 2 Show IP Mcache Field Descriptions (Continued)**

Field	Description
Ethernet0 MAC Header:	Outgoing interface list and respective MAC header that is used when rewriting the packet for output. If the interface is a tunnel, the MAC header will show the real next hop MAC header and then, in parentheses, the real interface name.

The following is sample output from the **show ip mcache** command when MDS is in effect.

```
Router# show ip mcache
```

```
IP Multicast Fast-Switching Cache
(*, 224.2.170.73), Fddi3/0/0, Last used: mds
  Tunnel3      MAC Header: 5000602F9C150000603E473F60AAAA030000000800 (Fddi3/0/0)
  Tunnel10     MAC Header: 5000602F9C150000603E473F60AAAA030000000800 (Fddi3/0/0)
  Tunnel11     MAC Header: 5000602F9C150000603E473F60AAAA030000000800 (Fddi3/0/0)
```

## show ip mds forwarding

On a line card, to display the MFIB table and forwarding information for multicast distributed switching (MDS), use the **show ip mds forwarding** EXEC command.

```
show ip mds forwarding [group-address] [source-address]
```

### Syntax Description

*group-address* (Optional) Address of the IP multicast group for which to display the MFIB table.

*source-address* (Optional) Address of the source of IP multicast packets for which to display the MFIB table.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the line card. This command displays the MFIB table, forwarding information and related flags and counts.

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**Note** To reach a line card's console, enter **attach slot#** (slot number where the line card resides).

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On a GSR only, line card commands can be executed from the RP using the following syntax:  
**execute [slot slot-number | all] command**

The *command* is any of the line card **show** commands, such as **show ip mds summary** and **show ip mds forward**.

### Sample Display

The following is sample output from the **show ip mds forwarding** command:

```
Router# show ip mds forwarding
IP multicast MDFS forwarding information and statistics:
Flags: N - Not MDFS switchable, F - Not all MDFS switchable, O - OIF Null
       R - In-ratelimit, A - In-access, M - MTU mismatch, P - Register set

Interface state: Interface, Next-Hop, Mac header

(*, 224.2.170.73),
  Incoming interface: Null
  Pkts: 0, last used: never, Kbps: 0, fast-flags: N
  Outgoing interface list: Null

(128.97.62.86, 224.2.170.73) [31]
  Incoming interface: Fddi3/0/0
  Pkts: 3034, last used: 00:00:00, Kbps: 0, fast-flags: M
  Outgoing interface list:
```

Table 3 describes the significant fields in the display.

**Table 3 Show IP MDS Forwarding Field Descriptions**

<b>Field</b>	<b>Description</b>
(128.97.62.86, 224.2.170.73) [31])	Source and group addresses. Number in [ ] is the hash bucket for the route.
Incoming interface:	Expected interface for a multicast packet from the source. If the packet is not received on this interface, it is discarded.
Pkts	Total number of packets switched by that entry.
last used:	Time when this MFIB entry was used to switch a packet.
Kbps:	Kilobits per second of the switched traffic.
Outgoing interface list:	Interfaces through which packets will be forwarded.

## show ip mds interface

To display the status of multicast distributed switching (MDS) interfaces, use the **show ip mds interface** EXEC command.

**show ip mds interface**

### Syntax Description

This command has no arguments or keywords.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the RP.

### Sample Display

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

```
Router# show ip mds interface

Ethernet1/0/0 is up, line protocol is up
Ethernet1/0/1 is up, line protocol is up
Fddi3/0/0 is up, line protocol is up
FastEthernet3/1/0 is up, line protocol is up
```

Table 4 describes the fields in the display.

**Table 4 Show IP MDS Interface Field Descriptions**

Field	Description
Ethernet1/0/0 is up	Status of interface.
line protocol is up	Status of line protocol.

## show ip mds stats

To display switching statistics or line card statistics for multicast distributed switching (MDS), use the **show ip mds stats** EXEC command.

```
show ip mds stats [switching | linecard]
```

### Syntax Description

**switching** (Optional) Displays switching statistics.

**linecard** (Optional) Displays line card statistics.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the RP.

### Sample Display

The following is sample output from the **show ip mds stats** command with the **switching** keyword:

```
Router# show ip mds stats switching

Slot Total      Switched   Drops     RPF       Punts     Failures
              (switch/clone)
  1    0          0          0         0         4         0/0
  3   20260925   18014717  253       93        2247454   1/0
```

Table 5 describes the fields in the display.

**Table 5 Show IP MDS Stats Switching Field Descriptions**

Field	Description
Slot	Slot number for the line card.
Total	Total number of packets received.
Switched	Total number of packets switched.
Drops	Total number of packets dropped.
RPF	Total number of packets that failed RPF lookup.
Punts	Total number of packets sent to the RP because the line card could not switch them.
Failures (switch/clone)	Times that the RP tried to switch but failed due to lack of resources / clone for RSP only; failed to get a packet clone.

The following is sample output from the **show ip mds stats** command with the **linecard** keyword:

```
Router# show ip mds stats linecard

Slot      Status      IPC(seq/max)  Q(high/route)  Reloads
  1        active      10560/10596   0/0             9
  3        active      11055/11091   0/0             9
```

Table 6 describes the fields in the display.

**Table 6 Show IP MDS Stats Linecard Field Descriptions**

Field	Description
Slot	VIP card slot.
Status	
IPC (seq/max)	Interprocess communication of packets sent from the RP to the VIP.
Q (high/route)	
Reloads	Number of times the image on the VIP was reloaded.

## show ip mds summary

To display a summary of the MFIB table for multicast distributed switching (MDS), use the **show ip mds summary** EXEC command.

```
show ip mds summary
```

### Syntax Description

This command has no arguments or keywords.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on a line card. On a GSR only, line card commands can be executed from the RP using the following syntax:

```
execute [slot slot-number | all] command
```

The *command* is any of the line card **show** commands, such as **show ip mds summary** and **show ip mds forward**.

### Sample Display

The following is sample output from the **show ip mds summary** command:

```
Router# show ip mds summary

IP multicast MDFS forwarding information and statistics:
Flags: N - Not MDFS switchable, F - Not all MDFS switchable, O - OIF Null
      R - In-ratelimit, A - In-access, M - MTU mismatch, P - Register set

Interface state: Interface, Next-Hop, Mac header

(*, 224.2.170.73),
  Incoming interface: Null
  Pkts: 0, last used: never, Kbps: 0, fast-flags: N
(128.97.62.86, 224.2.170.73) [31]
  Incoming interface: Fddi3/0/0
  Pkts: 3045, last used: 00:00:03, Kbps: 0, fast-flags: M
(128.223.3.7, 224.2.170.73) [334]
  Incoming interface: Fddi3/0/0
  Pkts: 0, last used: never, Kbps: 0, fast-flags: M
```

Table 7 describes the fields in the display.

**Table 7 Show IP MDS Summary Field Descriptions**

Field	Description
(128.97.62.86, 224.2.170.73) [31]	Source and group addresses. Number in [ ] is the hash bucket for the route.

**Table 7      Show IP MDS Summary Field Descriptions**

<b>Field</b>	<b>Description</b>
Incoming interface	Expected interface for a multicast packet from the source. If the packet is not received on this interface, it is discarded.
Pkts	Total number of packets switched by that entry.
last used	Time when this MFIB entry was used to switch a packet.
Kbps	Kilobits per second of the switched traffic.

## show ip pim interface count

To display switching counts for multicast distributed switching (MDS) and other fast switching statistics, use the **show ip pim interface count EXEC** command.

```
show ip pim interface [type number] count
```

### Syntax Description

*type number* (Optional) Interface type and number. If these arguments are specified, information is displayed about that interface only.

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the RP.

### Sample Display

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

```
Router# show ip pim interface count

Address          Interface          FS  Mpackets In/Out
128.223.224.8    Ethernet1/0/0     D   4/0
128.223.225.1    Ethernet1/0/1     D   0/0
128.223.222.8    Fddi3/0/0         D 20182993/56931
128.223.156.1    FastEthernet3/1/0 D 59991/462385
137.39.26.98     Tunnel0            * 394681/10686513
128.223.90.13    Tunnel1            * 517821/7185605
128.223.90.25    Tunnel3            * 26282/20027641
128.223.90.29    Tunnel4            * 2415/8688961
```

Table 8 describes the fields in the display.

**Table 8 Show IP PIM Interface Count Field Descriptions**

Field	Description
Address	Source address of the IP multicast packet.
Interface	Interface on which the packets are arriving.
FS	D indicates the packets were distributed switched.
Mpackets In/Out	Number of multicast packets received/number of multicast packets sent out.

## Debug Commands

This section documents the following debug commands:

- **debug ip mds ipc**
- **debug ip mds mevent**
- **debug ip mds mpacket**
- **debug ip mds process**

### debug ip mds ipc

To debug MDS interprocessor communication, that is, synchronization between the MFIB on the line card and the multicast routing table in the RP, use the **debug ip mds ipc** EXEC command.

```
[no] debug ip mds ipc {event | packet}
```

#### Syntax Description

<b>event</b>	Displays MDS events when there is a problem.
<b>packet</b>	Displays MDS packets.

#### Command Mode

EXEC

#### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the line card or RP.

#### Sample Display

Figure 1 shows sample **debug ip mds ipc packet** output.

#### Figure 1 Sample Debug IP MDS IPC Packet Output

```
VIP-Slot0# debug ip mds ipc packet
MDFS ipc packet debugging is on
VIP-Slot0#
MDFS: LC sending statistics message to RP with code 0 of size 36
MDFS: LC sending statistics message to RP with code 1 of size 680
MDFS: LC sending statistics message to RP with code 2 of size 200
MDFS: LC sending statistics message to RP with code 3 of size 152
MDFS: LC sending window message to RP with code 36261 of size 8
MDFS: LC received IPC packet of size 60 sequence 36212
```

Figure 2 shows sample **debug ip mds ipc event** output.

#### Figure 2 Sample Debug IP MDS IPC Event Output

```
VIP-Slot0# debug ip mds ipc event
MDFS: LC received invalid sequence 21 while expecting 20
```

## debug ip mds mevent

To debug MFIB route creation, route updates, and so on, use the **debug ip mds mevent** EXEC command.

**[no] debug ip mds mevent**

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the line card.

### Sample Display

Figure 3 shows sample **debug ip mds mevent** output.

**Figure 3 Sample Debug IP MDS Mevent Output**

```
VIP-Slot0# debug ip mds mevent
MDFS mroute event debugging is on
VIP-Slot0#clear ip mdfs for *
VIP-Slot0#
MDFS: Create (*, 239.255.255.255)
MDFS: Create (192.168.1.1/32, 239.255.255.255), RPF POS2/0/0
MDFS: Add OIF for mroute (192.168.1.1/239.255.255.255) on Fddi0/0/0
MDFS: Create (*, 224.2.127.254)
MDFS: Create (192.168.1.1/32, 224.2.127.254), RPF POS2/0/0
MDFS: Add OIF for mroute (192.168.1.1/224.2.127.254) on Fddi0/0/0
MDFS: Create (128.9.160.67/32, 224.2.127.254), RPF POS2/0/0
```

## debug ip mds mpacket

To debug multicast distributed switching (MDS) events, such as packet drops, interface drops, and switching failures, use the **debug ip mds mpacket** EXEC command.

**[no] debug ip mds mpacket**

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the line card.

### Sample Display

```
Router# debug ip mds mpacket
```

## debug ip mds process

To debug line card process level events, use the **debug ip mds process EXEC** command.

**[no] debug ip mds process**

### Command Mode

EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.2(11) GS.

Use this command on the line card or RP.

### Sample Display

Figure 4 shows sample **debug ip mds process** output.

**Figure 4 Sample Debug IP MDS Process Output**

```
Router# debug ip mds process
MDFS process debugging is on
Mar 19 16:15:47.448: MDFS: RP queueing mdb message for (210.115.194.5, 224.2.127.254) to
all linecards
Mar 19 16:15:47.448: MDFS: RP queueing midb message for (210.115.194.5, 224.2.127.254)
to all linecards
Mar 19 16:15:47.628: MDFS: RP servicing low queue for LC in slot 0
Mar 19 16:15:47.628: MDFS: RP servicing low queue for LC in slot 2
Mar 19 16:15:48.229: MDFS: RP queueing mdb message for (171.68.224.10, 224.2.127.254) to
all linecards
Mar 19 16:15:48.229: MDFS: RP queueing mdb message for (171.68.224.10, 224.2.127.254) to
all linecards
Mar 19 16:15:48.229: MDFS: RP queueing mdb message for (171.69.67.106, 224.2.127.254) to
all linecards
Mar 19 16:15:48.229: MDFS: RP queueing mdb message for (171.69.67.106, 224.2.127.254) to
all linecards
Mar 19 16:15:48.229: MDFS: RP queueing mdb message for (206.14.154.181, 224.2.127.254)
to all linecards
Mar 19 16:15:48.229: MDFS: RP queueing mdb message for (206.14.154.181, 224.2.127.254)
to all linecards
Mar 19 16:15:48.233: MDFS: RP queueing mdb message for (210.115.194.5, 224.2.127.254) to
all linecards
```

