



Multicast Routing and Forwarding Commands on Cisco IOS XR Software

This module describes the commands used to configure and monitor multicast routing on *Cisco IOS XR Software*.

For detailed information about multicast routing concepts, configuration tasks, and examples, refer to the *Implementing Multicast Routing on Cisco IOS XR Software* configuration module in the *Cisco IOS XR Multicast Configuration Guide for the Cisco XR 12000 Series Router*.

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accounting per-prefix

To enable accounting for multicast routing, use the **accounting per-prefix** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

accounting per-prefix

no accounting per-prefix

Syntax Description This command has no arguments or keywords.

Command Default This feature is disabled by default.

Command Modes

- Multicast routing configuration
- Multicast routing address family IPv4 and IPv6 configuration
- Multicast VRF configuration

Command History	Release	Modification
	Release 3.2	This command was introduced.
	Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **accounting per-prefix** command is used to enable per-prefix counters only in hardware. Cisco IOS XR Software counters are always present. When enabled, every existing and new (S, G) route is assigned forward, punt, and drop counters on the ingress route and forward and punt counters on the egress route. The (*, G) routes are assigned a single counter.

There are a limited number of counters on all nodes. When a command is enabled, counters are assigned to routes only if they are available.

To display packet statistics, use the **show mfib route** and the **show mfib hardware route statistics** commands. These commands display “N/A” for counters when no hardware statistics are available or when the **accounting per-prefix** command is disabled .

Task ID	Task ID	Operations
	multicast	read, write

Examples

The following example shows how to enable accounting for multicast routing:

```
RP/0/0/CPU0:router(config)# multicast-routing  
RP/0/0/CPU0:router(config-mcast)# accounting per-prefix
```

Related Commands

Command	Description
clear mfib hardware resource-counters	Clears global resource counters.
show mfib route , page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

accounting per-prefix forward-only

To reduce hardware statistics resource allocations when enabling accounting, particularly for multicast VPN (MVPN), use the **accounting per-prefix forward-only** command under multicast routing configuration mode. To return to the default mode of [accounting per-prefix](#), [page 4](#), use the **no** form of this command.

accounting per-prefix forward-only

no accounting per-prefix forward-only

Syntax Description

This command has no arguments or keywords.

Command Default

If no counters were configured, there is no default.

If the accounting per-prefix counter was previously configured, it becomes the default.

If no accounting was configured for multicast routing, forwarding-only is the default mode and triggers a data MDT transition in the case of MVPN deployment.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 and IPv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

The **accounting per-prefix forward-only** command has only one *fwd-only* counter. In other words, there is no *punt* or *drop* counter allocated.

We recommended this command for configuration of multicast VPN routing or for any line card that has a route-intensive configuration. Each individual router can support up to 150,000 routes.



Note

To verify the number of statistics allocated or free on a line card, use the [show mfib hardware resource-counters](#) command in EXEC mode.

There are a limited number of counters on all nodes. When accounting on a prefix is enabled, counters are assigned to routes only if they are available.

To display packet statistics, use the **show mfib route** and the **show mfib hardware route statistics** commands. These commands display “N/A” for counters when no hardware statistics are available or when neither the [accounting per-prefix, page 4](#) command nor the **accounting per-prefix forward-only** command are enabled.

You may switch between **accounting-perprefix** and **accounting per-prefix forward-only** statistics for ipv4 or ipv6 multicast family. However, be aware that only one set of counters is supported on the (*,G) routes (with fwd/punt/drop on ingress and fwd/drop on egress) regardless of whether you enabled the **accounting-perprefix** or **accounting-perprefix fwd-only** command.

Although you can switch accounting modes, this involves freeing the hardware statistics and reallocating them, thereby resulting in a loss of any previously collected data. Therefore, it is preferable to decide which statistics mode you want to use at the start to avoid the resource cost entailed by resetting the statistics counter values with a change in mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable accounting per-prefix forward-only for MVPN routing:

```
RP/0/0/CPU0:router(config)# multicast-routing  
RP/0/0/CPU0:router(config-mcast)# accounting per-prefix forward-only
```

Related Commands

Command	Description
accounting per-prefix, page 4	Enables accounting for multicast routing.
clear mfib hardware resource-counters	Clears global resource counters.

address-family (multicast)

To display available IP prefixes to enable multicast routing and forwarding on all router interfaces, use the **address-family** command in multicast-routing configuration mode or multicast VRF configuration submode. To disable use of an IP address prefix for routing, use the **no** form of this command.

address-family [*vrf vrf-name*] { **ipv4** | **ipv6** }

no address-family [*vrf vrf-name*] { **ipv4** | **ipv6** }

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	Specifies IPv4 address prefixes.
ipv6	Specifies IPv6 address prefixes.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration
Multicast VRF configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.7.0	This command was documented as a multicast command.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **address-family** command either from multicast routing configuration mode or from multicast VRF configuration submode to enter either the multicast IPv4 or IPv6 address family configuration submode, depending on which keyword was chosen. Use the **address-family** command with the [multicast-routing, page 41](#) command to start the following multicast processes:

- Multicast Routing Information Base (MRIB)
- Multicast Forwarding Engine (MFWD)
- Protocol Independent Multicast Sparse mode (PIM-SM)
- Internet Group Management Protocol (IGMP)
- Multicast Listener Discovery Protocol (MLD)

- Multicast Routing Information Base (MRIB)
- Multicast Forwarding Engine (MFWD)
- Protocol Independent Multicast Sparse mode (PIM-SM)
- Internet Group Management Protocol (IGMP)

To enable multicast routing and protocols on interfaces, you must explicitly enable the interfaces using the **interface** command in multicast routing configuration mode. This action can be performed on individual interfaces or by configuring a wildcard interface using the **alias** command.

To enable multicast routing on all interfaces, use the **interface all enable** command in multicast routing configuration mode. For any interface to be fully enabled for multicast routing, it must be enabled specifically (or configured through the **interface all enable** command for all interfaces) in multicast routing configuration mode, and it must not be disabled in the PIM and IGMP configuration modes.

**Note**

The **enable** and **disable** keywords available under the IGMP and PIM interface configuration modes have no effect unless the interface is enabled in multicast routing configuration mode—either by default or by explicit interface configuration.

To allow multicast forwarding functionality, while turning multicast routing functionality off, [interface-inheritance disable, page 27](#) command on a per interface or **interface all enable** basis in PIM or IGMP configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enter IPv6 multicast routing configuration mode:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# address-family
```

```
ipv6
RP/0/0/CPU0:router(config-mcast-default-
ipv6)#
```

The following example shows how to enter IPv6 VRF multicast routing configuration submode:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# vrf vrf-name address-family
```

```
ipv6
RP/0/0/CPU0:router(config-mcast-vrf-name-
ipv6)#
```

Related Commands

Command	Description
alias	Creates a command alias.

Command	Description
interface all enable , page 25	Enables multicast routing and forwarding on all new and existing interfaces.
interface all disable	Disables PIM processing on all new and existing interfaces.
interface-inheritance disable , page 27	Separates the disabling of multicast routing and forwarding.
interface (multicast) , page 23	Configures multicast interface properties.

boundary

To configure the multicast boundary on an interface for administratively scoped multicast addresses, use the **boundary** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

boundary *access-list*

no boundary *access-list*

Syntax Description

<i>access-list</i>	Access list specifying scoped multicast groups. The name cannot contain a space or quotation mark; it may contain numbers.
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Command Default

A multicast boundary is not configured.

Command Modes

Multicast routing interface configuration

Multicast routing VRF interface configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	This command was supported in multicast routing VRF interface configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **boundary** command is used to set up a boundary to keep multicast packets from being forwarded.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to set up a boundary for all administratively scoped addresses:

```
RP/0/0/CPU0:router# access-list 1 deny 239.0.0.0 0.255.255.255
RP/0/0/CPU0:router# access-list 1 permit 224.0.0.0 15.255.255.255
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# interface GigE 0/2/0/2
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# boundary 1
```

clear mfib counter

To clear Multicast Forwarding Information Base (MFIB) route packet counters, use the **clear mfib counter** command in EXEC mode.

clear mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **counter** [*group-address* | *source-address* | **signal**] [**location** { *node-id* | **all** }]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
<i>group-address</i>	(Optional) IP address of the multicast group.
<i>source-address</i>	(Optional) IP address of the source of the multicast route.
signal	(Optional) Clears signal table statistics.
location <i>node-id</i>	(Optional) Clears route packet counters from the designated node.
all	The all keyword clears route packet counters on all nodes

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.4.0	The signal keyword was added.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

**Note**

This command only clears MFIB route packet software counters. To clear MFIB hardware statistics counters use the **clear mfib hardware route statistics** command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to clear MFIB route packet counters on all nodes:

```
RP/0/0/CPU0:router# clear mfib counter location all
```

clear mfib database

To clear the Multicast Forwarding Information Base (MFIB) database, use the **clear mfib database** command in EXEC mode.

clear mfib [**ipv4** | **ipv6**] **database** [**location** { *node-id* | **all** }]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	(Optional) Clears global resource counters from the designated node.
all	The all keyword clears all global resource counters.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The location keyword was changed from optional to required.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following example shows how to clear the Multicast Forwarding Information Base (MFIB) database on all nodes:

```
RP/0/0/CPU0:router# clear mfib database location all
```

clear mfib hardware adjacency-counters

To clear the platform-specific information related to resource counters for the Multicast Forwarding Information Base, use the **clear mfib hardware adjacency-counters** command in EXEC mode.

```
clear mfib [ vrf vrf-name ] [ipv4] hardware adjacency-counters [ rx | tx ] [ location { node-id | all } ]
```

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
rx	Clears adjacency counters for packets received.
tx	Clears adjacency counters for packets sent.
location <i>node-id</i>	(Optional) Clears adjacency counters from the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.


Task ID

Task ID	Operations
multicast	read, write, execute

Examples

The following example shows how to clear all adjacency counters:

```
RP/0/0/CPU0:router# clear mfib hardware adjacency-counters rx location all
```

 clear mfib hardware adjacency-counters**Related Commands**

Command	Description
show mfib hardware resource-counters	Displays the allocated and freed hardware resources for the Multicast Forwarding Information Base (MFIB) process.

disable (multicast)

To disable multicast routing and forwarding on an interface, use the **disable** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

disable

no disable

Syntax Description This command has no arguments or keywords.

Command Default Multicast routing and forwarding settings are inherited from the global **interface enable all** command. Otherwise, multicast routing and forwarding is disabled.

Command Modes Multicast routing interface configuration
Multicast routing VRF interface configuration

Command History	Release	Modification
	Release 3.2	This command was introduced.
	Release 3.5.0	This command was supported in multicast routing VRF interface configuration mode.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **disable** command modifies the behavior of a specific interface to disabled. This command is useful if you want to disable multicast routing on specific interfaces, but leave it enabled on all remaining interfaces.

The following guidelines apply when the **enable** and **disable** commands (and the **no** forms) are used in conjunction with the **interface all enable** command:

- If the **interface all enable** command is configured:
 - The **enable** and **no** forms of the command have no additional effect on a specific interface.
 - The **disable** command disables multicast routing on a specific interface.
 - The **no disable** command enables a previously disabled interface.
- If the **interface all enable** command is not configured:
 - The **enable** command enables multicast routing on a specific interface.
 - The **no enable** command enables the previously disabled interface.

- The **disable** and **no** forms of the command have no additional effect on a specific interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on all interfaces and disable the feature only on GigabitEthernet interface 0/1/0/0:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# interface all enable
RP/0/0/CPU0:router(config-mcast-default-ipv4)# interface GigE 0/1/0/0
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# disable
```

Related Commands

Command	Description
enable (multicast), page 19	Enables multicast routing and forwarding on an interface.
interface all enable, page 25	Enables multicast routing and forwarding on all new and existing interfaces.

enable (multicast)

To enable multicast routing and forwarding on an interface, use the **enable** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

enable

no enable

Syntax Description This command has no arguments or keywords.

Command Default Multicast routing and forwarding settings are inherited from the global **interface enable all** command. Otherwise, multicast routing and forwarding is disabled.

Command Modes Multicast routing interface configuration
Multicast routing VRF interface configuration

Command History	Release	Modification
	Release 3.2	This command was introduced.
	Release 3.5.0	This command was supported in multicast routing VRF interface configuration mode.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **enable** command modifies the behavior of a specific interface to enabled. This command is useful if you want to enable multicast routing on specific interfaces, but leave it disabled on all remaining interfaces.

The following guidelines apply when the **enable** and **disable** commands (and the **no** forms) are used in conjunction with the **interface all enable** command:

- If the **interface all enable** command is configured:
 - The **enable** and **no** forms of the command have no additional effect on a specific interface.
 - The **disable** command disables multicast routing on a specific interface.
 - The **no disable** command enables a previously disabled interface.
- If the **interface all enable** command is not configured:
 - The **enable** command enables multicast routing on a specific interface.
 - The **no enable** command enables a previously enabled interface.

- The **disable** and **no** forms of the command have no additional effect on a specific interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on a specific interface only:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# interface GigE 0/1/0/0
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# enable
```

Related Commands

Command	Description
disable (multicast), page 17	Disables multicast routing and forwarding on an interface.
interface all enable, page 25	Enables multicast routing and forwarding on all new and existing interfaces.

forwarding-latency

To delay traffic being forwarded on a route, use the **forwarding-latency** command. To return to the default behavior, use the **no** form of this command.

forwarding-latency [*delay milliseconds*]

no forwarding-latency

Syntax Description	<i>delay milliseconds</i>	(Optional) Specifies the delay time in milliseconds. Range is 5 - 500.
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Command Default	The default delay time is 30 milliseconds.
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Command Modes	Multicast routing configuration IPv4 and IPv6 multicast routing configuration
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Command History	Release	Modification
	Release 3.8.0	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
------------------	--

Use the **forwarding-latency** command when you expect a receiver to leave and rejoin the same multicast group within a very short period such as 20 or 30 milliseconds. The delay may be required to provide the router sufficient time to update its Multicast Forwarding Information Base (MFIB) table.

When the **forwarding-latency** command is enabled, each interface is allocated a separate table lookup unit (TLU) block in the output interface list (olist), thereby increasing TLU hardware resource usage, and, for this reason, it should be used with caution when many multicast routes are present.

When the **forwarding-latency** command is disabled, up to three interfaces may share a single TLU block in the olist.

Task ID	Task ID	Operations
	multicast	read, write

Examples	The following example shows how to delay traffic from being forwarded for 120 milliseconds:
----------	---

```
RP/0/0/CPU0:router# configure
```

```
RP/0/0/CPU0:router(config)# multicast-routing  
RP/0/0/CPU0:router# forwarding-latency delay 120
```

interface (multicast)

To configure multicast interface properties, use the **interface** command in the appropriate configuration mode. To disable multicast routing for interfaces, use the **no** form of this command.

interface *type interface-path-id*

no interface *type interface-path-id*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration
IPv4 or IPv6 multicast routing configuration
Multicast VRF configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **interface** command to configure multicast routing properties for specific interfaces.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on all interfaces and disable the feature only on GigabitEthernet interface 0/1/0/0:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# interface all enable
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# interface GigE 0/1/0/0
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# disable
```

Related Commands

Command	Description
disable (multicast), page 17	Disables multicast routing and forwarding on an interface.
enable (multicast), page 19	Enables multicast routing and forwarding on an interface.
interface all enable, page 25	Enables multicast routing and forwarding on all new and existing interfaces.

interface all enable

To enable multicast routing and forwarding on all new and existing interfaces, use the **interface all enable** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

interface all enable

no interface all enable

Syntax Description

This command has no arguments or keywords.

Command Default

Multicast routing and forwarding is disabled by default.

Command Modes

Multicast routing configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command modifies the default behavior for all new and existing interfaces to enabled unless overridden by the **enable** or **disable** keywords available in interface configuration mode.

The following guidelines apply when the **enable** and **disable** commands (and the **no** forms) are used in conjunction with the **interface all enable** command:

- If the **interface all enable** command is configured:
 - The **enable** and **no** forms of the command have no additional effect on a specific interface.
 - The **disable** command disables multicast routing on a specific interface.
 - The **no disable** command enables a previously disabled interface.
- If the **interface all enable** command is not configured:
 - The **enable** command enables multicast routing on a specific interface.
 - The **no enable** command enables a previously enabled interface.
 - The **disable** and **no** forms of the command have no additional effect on a specific interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multicast routing on all interfaces and disable the feature only on GigabitEthernet interface 0/1/0/0:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# interface all enable
RP/0/0/CPU0:router(config-mcast)# interface GigE 0/1/0/0
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# disable
```

Related Commands

Command	Description
disable (multicast), page 17	Disables multicast routing and forwarding on an interface.
enable (multicast), page 19	Enables multicast routing and forwarding on an interface.

interface-inheritance disable

To separate PIM and IGMP routing from multicast forwarding on all interfaces, use the **interface-inheritance disable** command under multicast routing address-family IPv4 or IPv6 submode. To restore the default functionality, use the **no** form of the command.

interface-inheritance disable

no interface-inheritance disable

Syntax Description

This command has no arguments or keywords.

Command Default

This feature is not enabled by default.

Command Modes

Multicast routing configuration

Address- family IPv4 or IPv6 configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use of the **interface-inheritance disable** command together with the **interface type interface-path-id** or **interface all enable** command under multicast routing address-family IPv4 or IPv6 submode separates PIM and IGMP routing functionality from multicast forwarding on specified interfaces. You can nonetheless enable multicast routing functionality explicitly under PIM or IGMP routing configuration mode for individual interfaces.



Note

Although you can explicitly configure multicast routing functionality on individual interfaces, you cannot explicitly disable the functionality. You can only disable the functionality on all interfaces.

Used from the address-family ipv4 configuration submode, it prevents IGMP and PIM from inheriting the multicast-routing interface configuration. Whereas, if used from the address-family ipv6 configuration submode, it prevents MLD and PIM IPv6 from inheriting the multicast-routing interface configuration.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following configuration disables PIM and IGMP routing functionality on all the interfaces using the **interface-inheritance disable** command, but multicast forwarding is still enabled on all the interfaces in the example, based on use of the keywords **interface all enable**.

PIM is enabled on *Loopback 0* based on its explicit configuration (**interface Loopback0 enable**) under router pim configuration mode.

IGMP protocol is enabled on GigabitEthernet0/6/0/3, because it too has been configured explicitly under router igmp configuration mode (**interface GigabitEthernet0/6/0/3 router enable**):

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# address-family ipv4
RP/0/0/CPU0:router(config-mcast-default-ipv4)# interface-inheritance disable
RP/0/0/CPU0:router(config-mcast-default-ipv4)# interface loopback 1 enable
```

```
RP/0/0/CPU0:router(config-mcast-default-ipv4)# show run router pim
```

With the **interface-inheritance disable** command in use, IGMP, or MLD, and PIM configuration are enabled in the protocol configuration as follows:

```
router igmp
  interface loopback 0
    router enable
```

```
router pim
  interface loopback 0
    enable
```

```
router pim vrf default address-family ipv4
  interface Loopback0
    enable
```

```
RP/0/0/CPU0:router(config-mcast-default-ipv4)# show run router igmp
```

```
router igmp
  vrf default
    interface GigabitEthernet0/6/0/3
      router enable
```

log-traps

To enable logging of trap events, use the **log-traps** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

log-traps

no log-traps

Syntax Description This command has no arguments or keywords.

Command Default This command is disabled by default.

Command Modes

- Multicast routing configuration
- Multicast routing address family IPv4 and IPv6 configuration
- Multicast VRF configuration

Command History	Release	Modification
	Release 3.4.0	This command was introduced.
	Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	multicast	read, write

Examples The following example shows how to enable logging of trap events:

```
RP/0/0/CPU0:router# multicast-routing  
RP/0/0/CPU0:router(config-mcast)# log-traps
```

maximum disable

To disable maximum state limits, use the **maximum disable** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

maximum disable

no maximum disable

Syntax Description

This command has no arguments or keywords.

Command Default

Maximum state limits are enabled.

Command Modes

Multicast routing configuration

Multicast routing address family IPv4 and IPv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.
Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **maximum disable** command to override the default software limit on the number of multicast routes.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to disable maximum state limits:

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# maximum disable
```

mdt data

To configure multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN), use the **mdt data** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

mdt data *mdt-group-address* / *mask* [**threshold** *threshold-value*] [*acl-name*]

no mdt data *mdt-group-address* / *prefix-length* [**threshold** *threshold-value*] [*acl-name*]

Syntax Description

<i>mdt-group-address</i>	IP address of the MDT group.
<i>/ mask</i>	A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
threshold <i>threshold</i>	Specifies the traffic rate threshold to trigger data MDT. Range is 1 to 4294967295.
<i>acl-name</i>	Access list (ACL) for the customer's VRF groups allowed to perform data MDT.

Command Default

threshold : 1

Command Modes

Multicast routing configuration
 Multicast routing address family IPv4 and IPv6 configuration
 Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.7.0	Additional keyword information was added to the command. The bottom of the threshold value range was increased by 1.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When certain multicast streams exceed a configured bandwidth, the multicast data is moved to an MDT data group that is dynamically chosen from an available pool of multicast addresses. If the traffic bandwidth falls below the threshold, the source is switched back to the default MDT. To avoid transitions between the MDTs, traffic only reverts to the default MDT if traffic below the data MDT threshold is at least one minute old.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the data MDT group:

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# mdt data 172.23.2.2/24 threshold 1200 acl_A
```

The following example shows how to configure the data MDT group from the multicast VRF submode:

```
RP/0/0/CPU0:router(config)# multicast-mcast)# maximum disable-routing
RP/0/0/CPU0:router(config-mcast)# vrf vrf-name mdt data 172.23.2.2/24
```

Related Commands

Command	Description
mdt default, page 33	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt mtu, page 35	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt source, page 37	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.

mdt default

To configure the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT), use the **mdt default** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

mdt default { *mdt-default-group-address* | **ipv4** *mdt-default-address* }

no mdt default { *mdt-default-group-address* | **ipv4** *mdt-default-address* }

Syntax Description

<i>mdt-default-group-address</i>	IP address of the MDT default group entered in <i>A.B.C.D.</i> format.
ipv4	Specifies IPv4-encapsulated MDT.
<i>mdt-default-address</i>	MDT IPv4 default address entered in <i>A.B.C.D.</i> format

Command Default

The MDT default group address must be unique.

Command Modes

Multicast routing configuration
Multicast routing address family IPv4 and IPv6 configuration
Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.7.0	Additional keyword information was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The default MDT has a unique group address used to create MVPN multicast tunnel interfaces.

Although within the multicast VRF configuration submode, the MDT configuration uses either the **ipv4** or **ipv6** keyword to distinguish the appropriate multicast VPN, the MDT core tree is IPv4.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the MDT default group address from multicast routing configuration mode:

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# mdt default
172.16.10.1
```

The following example shows how to configure the MDT default group address from multicast VRF configuration submode for an IPv6 address family:

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# vrf vrf-name address-family ipv6
RP/0/0/CPU0:router(config-mcast-vrf-name-ipv6)#mdt default 172.16.10.1
```

Related Commands

Command	Description
mdt data, page 31	Configures multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN).
mdt mtu, page 35	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt source, page 37	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.

mdt mtu

To configure the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT), use the **mdt mtu** command in multicast VPN configuration mode. To remove this functionality, use the **no** form of this command.

mdt mtu *value*

no mdt mtu *value*

Syntax Description

<i>value</i>	MTU value. Range is 1401 to 65535.
--------------	------------------------------------

Command Default

The MDT tunnel default size is 1376.

Command Modes

Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the MTU of the multicast distribution tree::

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# vrf vrf_A
RP/0/0/CPU0:router(config-mcast-vrf_A-ipv4)# mdt mtu 2345
```

Related Commands

Command	Description
mdt data, page 31	Configures multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN).
mdt default, page 33	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).

Command	Description
mdt source, page 37	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.

mdt source

To configure the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address, use the **mdt source** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

mdt source *type interface-path-id*

no mdt source *type interface-path-id*

Syntax Description

<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

No default behavior or values

Command Modes

Multicast routing configuration
Multicast routing address family IPv4 configuration
Multicast VRF configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.9.0	Per VRF MDT source feature was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **mdt source** command to identify the root of the multicast distribution tree in the service provider network. This address is used to update all MVPN peers through multiprotocol BGP.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the interface used to set the MDT source address:

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# mdt source POS 0/1/0/0
```

**Note**

Per VRF MDT Source is a new feature introduced in IOS XR Software Release 3.9.0 apart from the existing default MDT source. Each VRF can have its own MDT source interface co-existing with the default MDT source to achieve core diversity.

The following example shows how to configure a per VRF MDT source:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# address-family ipv4
RP/0/0/CPU0:router(config-mcast-default-ipv4)# mdt source loopback0
RP/0/0/CPU0:router(config-mcast)# vrf foo
RP/0/0/CPU0:router(config-mcast-foo)# address-family ipv4
RP/0/0/CPU0:router(config-mcast-foo-ipv4)# mdt source loopback1 !
```

Related Commands

Command	Description
mdt data, page 31	Configures multicast data to be part of a multicast distribution tree (MDT) data group for multicast VPN (MVPN).
mdt default, page 33	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt mtu, page 35	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).

mhost default-interface

To configure the default interface for IP multicast transmission and reception to and from the host stack, use the **mhost default-interface** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

mhost { ipv4 | ipv6 } default-interface *type interface-path-id*

no mhost { ipv4 | ipv6 } default-interface *type interface-path-id*

Syntax Description

ipv4	Specifies IPv4 address prefixes.
ipv6	Specifies IPv6 address prefixes.
<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

If no Multicast Host (MHost) default interface is configured, an arbitrary interface is selected as the active MHost default.

If multicast routing feature is enabled, a multicast-enabled interface is always selected as the MHost default interface.

Command Modes

Global configuration
Global VRF configuration

Command History

Release	Modification
Release 2.0	This command was introduced.
Release 3.5.0	This command was supported in global VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **mhost default-interface** command configures the interface that the automatic route processing (Auto-RP), ping, and mtrace applications use for multicast transmissions, and the interface to which multicast groups are joined for reception.

Auto-RP, ping, and mtrace may use the MHost default interface to process multicast messaging. When IP multicast routing is enabled, packets sent to the MHost default interface are switched on other interfaces with a matching forwarding state. In addition, an arbitrary interface may be chosen to be the active MHost default interface if the configured interface is not operational. If no MHost default interface is configured with this command, an arbitrary interface is selected as the active MHost default.

**Note**

- The MHost default interface must be configured explicitly (preferably use a loopback interface).
- If the MHost default interface is not configured explicitly, then the router picks an interface.
- If the router picked multicast interface happens to be an ASBR link (on an ASBR router) and if that interface is configured with multicast boundary, then it may not work as intended because there is an IC (Internal Copy) flag on the interface and it has to accept all multicast packets on the interface.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure Loopback interface 1 as the default interface:

```
RP/0/0/CPU0:router(config)# mhost ipv4 default-interface loopback 1
```

Related Commands

Command	Description
show mhost default-interface , page 92	Displays the active default interface for the Multicast Host (MHost) process.

multicast-routing

To enter multicast routing configuration mode, use the **multicast-routing** command in global configuration mode. To return to the default behavior, use the **no** form of this command.

multicast-routing

no multicast-routing

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Global configuration

Command History	Release	Modification
	Release 3.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	multicast	read, write

Examples The following example shows how to enter multicast routing configuration mode:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)#
```

Related Commands	Command	Description
	accounting per-prefix, page 4	Enables per-prefix counters only in hardware.
	alias	Creates a command alias.
	interface (multicast), page 23	Configures multicast interface properties.

Command	Description
interface all enable , page 25	Enables multicast routing and forwarding on all new and existing interfaces.

multipath

To enable Protocol Independent Multicast (PIM) to divide the multicast load among several equal cost paths, use the **multipath** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

[address-family ipv4] **multipath** [source-specific-hash]

[address-family ipv6] **multipath** [interface-extended-hash | source-specific-hash]

no multipath

Syntax Description

interface-extended-hash (Optional) Enables extensions for non-unique next-hop addresses.

Note This option is available for IPv6 addressing.

source-specific-hash (Optional) Enables multipath hashing for the source only.

Note This option is available only for IPv6 addressing.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address-family ipv4 and ipv6 configuration

Multicast VRF configuration

Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

By default, equal-cost multipath (ECMP) paths are not load balanced. A single path from each unicast route is used for all multicast routes (which is the equivalent of the **no** form of the multipath command).

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable multipath functionality:

```
RP/0/0/CPU0:router(config)# mcast-routing  
RP/0/0/CPU0:router(config-mcast)# mcast-hash
```

nsf (multicast)

To turn on the nonstop forwarding (NSF) capability for the multicast routing system, use the **nsf** command in multicast routing configuration mode. To turn off this function, use the **no** form of this command.

nsf [*lifetime seconds*]

no nsf [*lifetime*]

Syntax Description

lifetime <i>seconds</i>	(Optional) Specifies the maximum time (in seconds) for NSF mode. Range is 30 to 3600.
--------------------------------	---

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family ipv4 and ipv6 configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The lifetime <i>lifetime</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **nsf** command does not enable or disable the multicast routing system, but just the NSF capability for all the relevant components. When the **no** form of this command is used, the NSF configuration is returned to its default disabled state.

Enable multicast NSF when you require enhanced availability of multicast forwarding. When enabled, failures of the control-plane multicast routing components Multicast Routing Information Base (MRIB) or Protocol Independent Multicast (PIM) will not cause multicast forwarding to stop. When these components fail or communication with the control plane is otherwise disrupted, existing Multicast Forwarding Information Base (MFIB) entries continue to forward packets until either the control plane recovers or the MFIB NSF timeout expires.

Enable multicast NSF when you upgrade control-plane Cisco IOS XR Software packages so that the live upgrade process does not interrupt forwarding.

When the MFIB partner processes enter NSF mode, forwarding on stale (nonupdated) MFIB entries continues as the control-plane components attempt to recover gracefully. Successful NSF recovery is signaled to the Multicast Forwarding Engine (MFW) partner processes by MRIB. MRIB remains in NSF mode until Internet Group Management Protocol (IGMP) has recovered state from the network and host stack *and* until PIM has recovered state from the network and IGMP. When both PIM and IGMP have recovered and fully updated

the MRIB, MRIB signals the MFIBs that NSF is ending, and begins updating the stale MFIB entries. When all updates have been sent, the MFWD partner processes delete all remaining stale MFIB entries and returns to normal operation, ending the NSF mode. MFIB NSF timeout prior to the signal from MRIB may cause NSF to end, and thus forwarding to stop.

When forwarding is in NSF mode, multicast flows may continue longer than necessary when network conditions change due to multicast routing protocols, unicast routing protocol reachability information, or local sender and receiver changes. The MFWD partner processes halt forwarding on stale MFIB entries when the potential for a multicast loop is detected by receipt of incoming data on a forwarding interface for the matching MFIB entry.

**Note**

For NSF to operate successfully in your multicast network, you must also enable NSF for the unicast protocols (such as Intermediate System-to-Intermediate System [IS-IS], Open Shortest Path First [OSPF] and Border Gateway Protocol [BGP]) that PIM relies on for Reverse Path Forwarding (RPF) information. See the appropriate configuration modules to learn how to configure NSF for unicast protocols.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable NSF for the multicast routing system:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# nsf
```

Related Commands

Command	Description
nsf lifetime (IGMP/MLD)	Configures the maximum time for the NSF timeout value under IGMP or MLD.
nsf lifetime (PIM)	Configures the NSF timeout value for the PIM process.
show igmp nsf	Displays the state of NSF operation in IGMP.
show mfib nsf, page 81	Displays the state of NSF operation for the MFIB line cards.
show mrrib nsf, page 106	Displays the state of NSF operation in the MRIB.
show pim nsf	Displays the state of NSF operation for PIM.

oom-handling

To enable the out-of-memory (OOM) functionality on multicast routing software components, use the **oom-handling** command in multicast routing configuration mode. To remove this functionality, use the **no** form of this command.

oom-handling

no oom-handling

Syntax Description

This command has no arguments or keywords.

Command Default

This command is disabled by default.

Command Modes

Multicast routing configuration

Multicast routing address family ipv4 configuration

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When the **oom-handling** command is enabled, and the router memory is low or in a warning state, the following states are not created:

- Protocol Independent Multicast (PIM) route states in response to PIM join and prune messages, and register messages
- Internet Group Management Protocol (IGMP) group states
- External Source-Active (SA) states in Multicast Source Discovery Protocol (MSDP)

Multicast routing **show** commands such as the **show pim topology** command indicate when the router is running low on memory and that new state creation has stopped.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to enable the out-of-memory functionality:

```
RP/0/0/CPU0:router# multicast-routing
RP/0/0/CPU0:router(config-mcast)# oom-handling
```

Related Commands

Command	Description
show pim topology	Displays PIM topology table information.

rate-per-route

To enable individual (source, group [S, G]) rate calculations, use the **rate-per-route** command in the appropriate configuration mode. To remove this functionality, use the **no** form of this command.

rate-per-route

no rate-per-route

Syntax Description This command has no arguments or keywords.

Command Default This command is disabled by default.

Command Modes

- Multicast routing configuration
- Multicast routing address family ipv4 and ipv6 configuration
- Multicast VRF configuration

Command History	Release	Modification
	Release 3.4.0	This command was introduced.
	Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	multicast	read, write

Examples The following example shows how to enable individual route calculations:

```
RP/0/0/CPU0:router# multicast-routing vrf vpn12 address-family ipv4
RP/0/0/CPU0:router(config-mcast)# rate-per-route
```

Related Commands	Command	Description
	show mfib route , page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib connections

To display the status of Multicast Forwarding Information Base (MFIB) connections to servers, use the **show mfib connections** command in EXEC mode.

show mfib [**ipv4** | **ipv6**] **connections** [**location** *node-id*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	(Optional) Specifies MFIB connections associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show mfib connections** command to display a list of servers connected to the MFIB and the status of the connections.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib connections** command:

```
RP/0/0/CPU0:router# show mfib connections

Netio           : connected
IM              : connected
Pakman          : connected
MRIB            : connected
IFH             : connected
SysDB-Global    : connected
SysDB-Local     : connected
```

```
SysDB-NSF      : connected
SYSDB-EDM      : connected
SYSDB-Action   : connected
AIB            : connected
MLIB           : connected
IDB            : connected
IIR            : connected
IPARM          : connected
GSP            : connected
```

Related Commands

Command	Description
show mfib interface, page 77	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib counter

To display Multicast Forwarding Information Base (MFIB) counter statistics for packets that have dropped, use the **show mfib counter** command in EXEC mode.

show mfib [*vrf vrf-name*] [**ipv4** | **ipv6**] **counter** [*location node-id*]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	(Optional) Specifies MFIB counter statistics associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show mfib counter** command displays packet drop statistics for packets that cannot be accounted for under route counters.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib counter** command:

```
RP/0/0/CPU0:router# show mfib counter location 0/1/CPU0
MFIB global counters are :
* Packets [no input idb] : 0
```

```
* Packets [failed route lookup] : 0
* Packets [Failed idb lookup] : 0
* Packets [Mcast disabled on input I/F] : 0
* Packets [encap drops due to ratelimit] : 0
* Packets [MC disabled on input I/F (iarm nfn)] : 0
```

Table 1: [show mfib counter Field Descriptions](#), [page 53](#) describes the significant fields shown in the display.

Table 1: show mfib counter Field Descriptions

Field	Description
Packets [no input idb]	Packets dropped because no input interface information was found in the packet.
Packets [failed route lookup]	Packets dropped because of failure to match any multicast route.
Packets [Failed idb lookup]	Packets dropped because the descriptor block was not found for an interface (incoming or outgoing).
Packets [Mcast disabled on input I/F]	Packets dropped because arriving on an interface that was not enabled for the multicast routing feature.
Packets [encap drops due to ratelimit]	Packets dropped because of rate limit.

Related Commands

Command	Description
show mfib interface , page 77	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mfib route , page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib encap-info

To display the status of encapsulation information for Multicast Forwarding Information Base (MFIB), use the **show mfib encap-info** command in EXEC mode.

show mfib [*vrf vrf-name*] [*ipv4* | *ipv6*] **encap-info** [*location node-id*]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	(Optional) Specifies MFIB connections associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This feature is useful for Multicast VPN network implementations.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib encap-info** command:

```
RP/0/0/CPU0:router# show mfib vrf vrf_a encap-info
```

Encaps String	Dependent Routes #	Encaps Table ID	MDT Name/ Handle
(192.168.5.203, 255.1.1.1)	5	0xe0000000	mdtA1 (0x100a480)

Related Commands

Command	Description
show mfib interface, page 77	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware api-counter

To display hardware platform API counters for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware api-counter** command in EXEC mode.

show mfib [**ipv4** | **ipv6**] **hardware api-counter** **location** *node-id*

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command is to be used only on request from Cisco Technical Support for troubleshooting. This command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following sample output is from the **show mfib hardware api-counter** command:

```
RP/0/0/CPU0:router# show mfib hardware api-counter location 0/3/cpu0

LC Type: Trident
API counter
c12k_get_ipv4_mc_iinfo 7525805
c12k_get_ipv4_mc_rinfo 7539683
c12k_v4mc_delete_aib 0
c12k_v4mc_update_aib 9
c12kmc_enable_disable_acct 10
c12kmc_enable_disable_mcast 10
c12kmc_handle_mtu_update 10
```



```
cl2kmc_handle_mtu_delete 0
cl2kmc_im_bulk_allocate 5
cl2kmc_im_bulk_free 5
cl2kmc_im_process 24
cl2kmc_rpf_bitmap_operation 0
cl2kmc_update_adj_mtu 0
cl2kmc_update_idb_qbase 0
ipmc_platform_vpn_info_operation 1
ipv4mc_platform_get_hw_eg_stats 0
ipv4mc_platform_get_hw_in_stats 0
ipv4mc_platform_idb_operation 158
ipv4mc_platform_intf_operation 15107418
ipv4mc_platform_intf_delete 10338
ipv4mc_platform_route_operation 19
ipv4mc_platform_route_delete 1
ipv4mc_platform_table_operation 19
```

show mfib hardware mlc

To display master line card information for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware mlc** command in EXEC mode.

show mfib [*vrf vrf-name*] [*ipv4* | *ipv6*] **hardware mlc location** *node-id*

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

This command will not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware mlc** command:

```
RP/0/0/CPU0:router# show mfib hardware mlc location 0/3/cpu
LC Type: Trident
Line card: 0/3/CPU0 is not a master line card for table: default
Hardware address is: 0x1c8000
```

```
RP/0/0/CPU0:jli-iox1#sh mfib vrf red hardware mlc location 0/3/cpu0
Line card: 0/3/CPU0 is master line card for table: red
Hardware address is: 0x1c8000
```

show mfib hardware route accept-bitmap

To display platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes, use the **show mfib hardware route accept-bitmap** command in EXEC mode.

```
show mfib [ ipv4 | ipv6 ] hardware route accept-bitmap [*] [ source-address ] [ group-address [ /
prefix-length ] ] location node-id
```

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
	(Optional) Displays shared tree entry.
<i>source-address</i>	(Optional) IP address or hostname of the multicast route source:
<i>group-address</i>	(Optional) IP address or hostname of the multicast group.
<i>/ prefix-length</i>	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
location node-id	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The sample output from the **show mfib hardware route accept-bitmap** command displays the accepting interface list for (*,233.1.0.0/16) and (*,233.4.0.0/16) only. The accepting interface list is POS0/1/1/0, POS0/1/1/1, and POS0/1/1/3.

RP/0/0/CPU0:router# **show mfib hardware route accept-bitmap detail location 0/1/CPU0**

```

LC Type: Trident
Source: Source address      Group: Group Address      M: Mask Length
iQoS  : Ingress QoS tag      C      : Directly connected check flag
RPF   : Accepting interface for non-bidir entries
S     : Signal on RPF interface      FU    : For us
PLUext: PLU result extension address
FGID  : Fabric Group ID
oQoS  : Output QoS tag
FGID2 : Secondary Fabric Group ID
A_num  : Number of I/Fs in the accepting list
A_TLU  : Address of the first TLU in the accepting list
Interface: Accepting interface name
Source Group  M  iQoS C RPF S FU PLUext FGID FGID2 P PF BA oQoS A_num A_TLU Interface
* 224.0.0.0    4  0   T Null F F 200ae2c 41785 -1   F F T  0  0  Null
* 224.0.0.0    24 0   F Null F F 200d00f 47206 -1   F F T  0  0  Null
* 224.0.1.39   32 0   F Null F F 200d000 47205 -1   T F F  0  0  Null
* 224.0.1.40   32 0   F Null F F 200d00d 27202 -1   T F F  0  0  Null
* 232.0.0.0    8  0   F Null F F 200d010 47207 -1   F F T  0  0  Null
* 233.1.0.0    16 0   F Null F F 200ae34 44106 -1   F F T  0  3  4400 PO0/1/1/0
* 233.1.0.0    16 0   F Null F F 200ae34 44106 -1   F F T  0  3  4400 PO0/1/1/1
* 233.1.0.0    16 0   F Null F F 200ae34 44106 -1   F F T  0  3  4400 PO0/1/1/3
* 233.1.1.1    32 0   F Null F F 200a418 27205 -1   F F T  0  0  4400
* 233.1.1.2    32 0   F Null F F 200a419 27206 -1   F F T  0  0  4400
* 233.1.1.3    32 0   F Null F F 200a41c 27207 -1   F F T  0  0  4400
* 233.1.1.4    32 0   F Null F F 200a41d 27208 -1   F F T  0  0  4400
* 233.4.0.0    16 0   F Null F F 200ae3c 42043 -1   F F T  0  3  4500 PO0/1/1/0
* 233.4.0.0    16 0   F Null F F 200ae3c 42043 -1   F F T  0  3  4500 PO0/1/1/3

```

RP/0/0/CPU0:router# **show mfib hardware route accept-bitmap detail location 0/0/CPU0**

```

LC Type: Trident
Source: Source address      Group: Group Address      M: Mask Length
iQoS  : Ingress QoS tag      C      : Directly connected check flag
RPF   : Accepting interface for non-bidir entries
S     : Signal on RPF interface      FU    : For us
FGID  : Fabric Group ID
oQoS  : Output QoS tag
FGID2 : Secondary Fabric Group ID
A_num  : Number of I/Fs in the accepting list
Interface: Accepting interface name
Source Group  M
Source: *      Group: 224.0.0.0      Mask length: 24
Source: *      Group: 224.0.1.39     Mask length: 32
Source: *      Group: 224.0.1.40     Mask length: 32
Source: *      Group: 227.0.0.1      Mask length: 32
Source: 4.0.0.2 Group: 227.0.0.1      Mask length: 64
Source: *      Group: 230.0.0.0      Mask length: 8
Source: *      Group: 232.0.0.0      Mask length: 8

```

 show mfib hardware route accept-bitmap**Related Commands**

Command	Description
show mfib interface, page 77	Displays interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process.

show mfib hardware route ingress

To display information about the routes on ingress for the platform-specific Multicast Forwarding Information Base (MFIB) in the hardware, use the **show mfib hardware route ingress** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route ingress location** *node-id*

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	Specifies the <i>node-id</i> for an MFIB-designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

Due to the size of the output from this command, output is deposited to /tmp/show_mfwd_hw_route_ingress on the line card. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route ingress** command:

```
RP/0/0/CPU0:router# show mfib hardware route ingress location 0/3/cpu0
```

show mfib hardware route ingress

LC Type: Trident

done. file is at /tmp/show_mfwd_hw_route_ingress on LC

RP/0/0/CPU0:router# **run cat /net/node0_3_CPU0/tmp/show_mfwd_hw_route_ingress**

group	source	tlu-addr	slotmask	mtu	flag	gp	rpf	rpf-ptr	mdt	dma_addr	pkts
e2030100	0	20e6440	8	2000	6	11	ffff	0	0	0	0
e2020001	0	20e6400	8	2000	6	11	ffff	0	0	0	0
e2010001	0	20e63c0	8	2000	6	11	ffff	0	0	0	0
e2040001	0	20e6380	8	2000	6	11	ffff	0	0	0	0
e3010490	13d0206	20cec00	8	2000	2	11	4	0	0	2a90c	11147429
e3010e96	13d0206	20cebc0	8	2000	2	11	4	0	0	2a89c	11147455
e3010e95	13d0206	20ceb80	8	2000	2	11	4	0	0	2a89a	11147455
e3010e94	13d0206	20ceb40	8	2000	2	11	4	0	0	2a8a0	11147455

Related Commands

Command	Description
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route location

To display the platform-specific Multicast Forwarding Information Base (MFIB)-enabled location in the hardware, use the **show mfib hardware route location** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] [*****] [*source-address*] [*group-address* [/ *prefix-length*]] **location** *node-id*

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
	(Optional) Displays shared tree entry.
<i>source-address</i>	(Optional) IP address or hostname of the multicast route source.
<i>group-address</i>	(Optional) IP address or hostname of the multicast group.
/ <i>prefix-length</i>	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
<i>node-id</i>	Node ID for an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

T



Note

The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route location** command:

```
RP/0/0/CPU0:router# show mfib hardware route 1.1.1.1 228.1.1.1 location 0/3/cpu0

LC Type: Trident
(*,227.0.0.0/8)
version:0x00001dc0
tlu address:0x02060140:NA
slotmask:0000 bmainfo:NA loq:c000 mdt_uidx:0000 rpf_uidx:ffff next_tid:0000
mtu:punt(lo):NA gather:RX_PUNT_FBHDR(0):NA(NA) RPF_bitmap_ptr:0x00000000
SG fwd flag hw addr[tlu]:0x0[0x0]:0x0[NA] (flag:0x0_0x0:0x0_0x0)
ingress flags:0x04 [dcs]
pkts/bytes:4972739/268527906:NA/NA
vmr id: invalid vmr id
11:11:51 AM?
11:11:51 AM?
11:11:52 AM?RP/0/0/CPU0:jli-iox1#sh mfib hardware route 226.1.0.1 loc 0/3/cpu0 (*,226.1.0.1)
version:0x00001118
tlu address:0x020e63c0:NA
slotmask:0008 bmainfo:NA loq:c000 mdt_uidx:0000 rpf_uidx:ffff next_tid:0000
mtu:8192:NA gather:RX_PUNT_FBHDR(0):NA(NA) RPF_bitmap_ptr:0x00000000
SG fwd flag hw addr[tlu]:0x0[0x0]:0x0[NA] (flag:0x0_0x0:0x0_0x0)
ingress flags:0x06 [signal rpf failure, dcs]
pkts/bytes:0/0:NA/NA
vmr id: invalid vmr id
```

Related Commands

Command	Description
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route olist

To display platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware, use the **show mfib hardware route olist** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route olist** { [*] | [*source-address*] [*group-address*] [*prefix-length*] } **location** *node-id*

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
	(Optional) Displays shared tree entries.
<i>source-address</i>	(Optional) IP address or hostname of the multicast route source.
<i>group-address</i>	(Optional) IP address or hostname of the multicast group.
<i>/ prefix-length</i>	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
location <i>node-id</i>	Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show mfib hardware route olist** command displays the output interface list (olist) for each route. The Multicast Forwarding (MFWD) process stores olist interfaces in a table lookup unit (TLU) block (in groups

of three). As such, the command displays each route three times. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route olist** command for line card 0/3/CPU0:

```
RP/0/0/CPU0:router# show mfib hardware route olist 225.0.0.0 location 0/3/cpu0 (*,225.0.0.0)
```

```
LC Type: Trident
tlu_addr:0x001b8280
  l2:(14)01005E00000000012442551FD0800 gp:11 mtu:1500
    flags:0x02 uidb:0x0006 next:0x0e00dc16
    pkt/bytes:0/0
tlu_addr:0x001b82c0
  l2:(14)01005E00000000012442552010800 gp:17 mtu:1500
    flags:0x02 uidb:0x000a next:0x00000000
    pkt/bytes:0/0
```

```
tlu_addr - TLU address
l2: L2 encapsulation string
gp: Gather profile
mtu: Maximum transmission unit (MTU)
uidb: UIDB index
next: Next TLU address
pkt: Packet counter
bytes: Byte counter
```

Related Commands

Command	Description
show mfib hardware route qos, page 69	Displays the status of Multicast Forwarding Information Base (MFIB) quality of service (QoS) information.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route qos

To display the status of Multicast Forwarding Information Base (MFIB) quality of service (QoS) information, use the **show mfib hardware route qos** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4**] **hardware route qos** { [*] | [*source-address*] [*group-address*] [/ *prefix-length*] } **location** *node-id*

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
*	(Optional) Displays shared tree entries.
<i>source-address</i>	(Optional) IP address or hostname of the multicast route source.
<i>group-address</i>	(Optional) IP address or hostname of the multicast group.
/ <i>prefix-length</i>	(Optional) Prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value.
location <i>node-id</i>	Specifies an MFIB- designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route qos** command:

```
RP/0/0/CPU0:router# show mfib hardware route qos 1.61.2.6 227.1.1.4 location 0/0/5cpu0
LC Type: Trident
(1.61.2.6,227.1.1.4)
version:0x000059ec
```

Related Commands

Command	Description
show mfib hardware route olist, page 67	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route summary, page 71	Displays summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware route summary

To display summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry, use the **show mfib hardware route summary** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **hardware route summary location** *node-id*

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location <i>node-id</i>	(Required) Specifies an MFIB-designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.4.0	This command was introduced.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show mfib hardware summary** command to display hardware information for the route of the node.

The longest-prefix match route is displayed depending on the provided source and group addresses. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware route summary** command:

```
RP/0/0/CPU0:router# show mfib hardware route summary location 0/1/cpu0
```

show mfib hardware route summary

```

LC Type: Trident
H/W IP Multicast Forwarding Information Base Summary
  No. of (*,G) routes = 5
  No. of (S,G) routes = 10

```

```
RP/0/RSP0/CPU0:router# show mfib hardware route summary location 0/0/CPU0
```

```

LC Type: Trident
H/W IP Multicast Forwarding Information Base Summary
  No. of (*,G) routes = 6
  No. of (S,G) routes = 5
  No. of (S,G) MoFRR routes = 0,    Maximum supported MoFRR routes = 1024

```

```
RP/0/RSP0/CPU0:router# show mfib hardware route summary location 0/4/cPU0
```

```

LC Type: A9K-SIP-700
Hardware IP Multicast Forwarding Information Base Route Summary
Number of hardware (*, G) routes = 6
Number of hardware (S, G) routes = 1
Number of hardware route-interfaces = 4
Number of hardware Rx adjacencies = 7
Number of hardware Tx adjacencies = 3
Number of ref to decap adjacency = 0
Mvpn master LC status = False

```

[Table 2: show mfib hardware route summary Field Descriptions, page 72](#) describes the significant fields shown in the display.

Table 2: show mfib hardware route summary Field Descriptions

Field	Description
No. of (*,G) routes	Number of (*,G) routes installed in hardware.
No. of (S,G) routes	Number of (S,G) routes installed in hardware.
Maximum supported MoFRR routes	Maximum number of MoFRR routes supported in hardware.

Related Commands

Command	Description
show mfib hardware route accept-bitmap, page 60	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route olist, page 67	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mfib hardware session-info

To display hardware abstraction layer (HAL) session information for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware session-info** command in EXEC mode.

show mfib [**ipv4** | **ipv6**] **hardware session-info** **location** *node-id*

Syntax Description

location <i>node-id</i>	Specifies an MFIB-designated node.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

This command is to be used only on request from Cisco Technical Support for troubleshooting. The command does not display any useful output if only RSP is specified or if no location is specified.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware session-info** command:

```
RP/0/0/CPU0:router# show mfib hardware session-info location 0/3/cpu0

LC Type: Trident
HAL Session Info:(0x5276de8c):
default key(0x5276dcb0): vmr_id 0x2860009c:0x2860009b
```

```
default punt key(0x0): vmr_id 0x0:0x0
default cluster(0x5276dd4c): tlu address 0x2060000:0x0
default punt cluster(0x0): tlu address 0x0:0x0
default replicord(0x5276dde8): tlu address 0x0:0xa0000
mlc table sram addr: 0x1c8000
```

show mfib hardware trace

To display platform-specific traces for the Multicast Forwarding Information Base (MFIB) process, use the **show mfib hardware trace** command in EXEC mode.

show mfib [**ipv4** | **ipv6**] **hardware trace** { **events** | **exceptions** } [**file** *file-name* **original file** *file-name*] [**hexdump**] [**last** *n-entries*] [**location** *node-id* | **all**] [**reverse**] [**stats**] [**tailf**] [**unique**] [**verbose**] [**wrapping**]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
events	Displays event traces.
exceptions	Displays exception traces.
file <i>file-name</i>	(Optional) Displays a specific file.
original	(Optional) Specifies that the original location of a specified file be displayed.
hexdump	(Optional) Displays traces in hexadecimal format.
last <i>n-entries</i>	(Optional) Displays the last numbered entries. Range is 1 to 4294967295.
location <i>node-id</i>	(Optional) Specifies an MFIB-designated node.
all	Specifies all locations.
reverse	(Optional) Displays the latest traces first.
stats	(Optional) Displays statistics.
tailf	(Optional) Displays new traces as they are added.
unique	(Optional) Displays unique entries with counts.
verbose	(Optional) Displays information for internal debugging.
wrapping	(Optional) Displays the wrapping entries in the command output.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.4.0	This command was introduced.
Release 3.5.0	The events keyword was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

**Note**

The **exceptions** keyword is used for troubleshooting.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib hardware trace** command:

```
RP/0/0/CPU0:router# show mfib hardware trace events location 0/3/cpu0
```

```
LC Type: Trident
201 wrapping entries (2048 possible, 0 filtered, 201 total)
Jun 2 18:03:01.215 c12k_ipv4_mcast 0/3/CPU0 t1 init_event: read_only = FALSE, plat_ext =
0x5276de84
Jun 2 18:03:05.034 c12k_ipv4_mcast 0/3/CPU0 t1 idb_operation: action = 0x00040000, idb =
0x00000000, sec_idb = 0x00000000, op_spec = 0x0801c868
Jun 2 18:03:05.034 c12k_ipv4_mcast 0/3/CPU0 t1 idb_operation: action = 0x00000800, idb =
0x00000000, sec_idb = 0x00000000, op_spec = 0x0801c868
Jun 2 18:03:05.034 c12k_ipv4_mcast 0/3/CPU0 t1 idb_operation: action = 0x00040000, idb =
0x00000000, sec_idb = 0x00000000, op_spec = 0x0801c868
```

show mfib interface

To display interface-related information used during software multicast switching in the Multicast Forwarding Information Base (MFIB) process, use the **show mfib interface** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **interface** [*type interface-path-id*] [**detail** | **route**] [**location** *node-id*]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
<i>type</i>	(Optional) Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	(Optional) Physical interface or virtual interface. Note Use the show interfaces command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
detail	(Optional) Specifies detailed information for packet statistics on interfaces.
route	(Optional) Specifies a list of routes associated with the interface. This option is available if an interface <i>type</i> and <i>instance</i> are specified.
location <i>node-id</i>	(Optional) Specifies packet statistics associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show mfib interface** command displays counters for the number of packets and bytes that are handled by software switching. Counters for packets processed by hardware are displayed by the appropriate **show mfib hardware** command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib interface** command for the multicast route on node 0/2/CPU0 that is associated with the Gigabit Ethernet interface 0/2/0/2:

```
RP/0/0/CPU0:router# show mfib interface GigE 0/2/0/2 location 0/2/CPU0
```

```
Interface : GigE0/2/0/2 (Enabled)
```

```
Mcast pkts in : 5839, Mcast pkts out : 0 TTL Threshold : 0 Ref Count : 18
```

The following is sample output from the **show mfib interface** command with the **detail** and **location** keywords specified:

```
RP/0/0/CPU0:router# show mfib interface detail location 0/2/CPU0
```

```
Interface : FINT0/2/CPU0 [0x3000000] (Disabled) PHYSICAL Create Unknown Mcast pkts in: 0,
Mcast pkts out: 0 TTL Threshold : 0, VRF ID: 0x60000000, Multicast Adjacency Ref Count: 2,
Route Count: 0, Handle: 0x3000000 Primary address : 0.0.0.0/32 Secondary address : 0.0.0.0/32
```

```
Interface : GigE0/2/0/2 [0x3000900] (Enabled) PHYSICAL Create Rcvd Mcast pkts in: 5844,
Mcast pkts out: 0 TTL Threshold : 0, VRF ID: 0x60000000, Multicast Adjacency Ref Count: 18,
Route Count: 15, Handle: 0x3000900 Primary address : 112.112.112.203/24 Secondary address
: 0.0.0.0/32
```

[Table 3: show mfib interface Field Descriptions](#), [page 78](#) describes the significant fields shown in the display.

Table 3: show mfib interface Field Descriptions

Field	Description
Interface	Interface name. Enabled if the interface is configured for multicast routing. The word “PHYSICAL” is displayed if the interface is a nonvirtual interface.
Mcast pkts in	Number of incoming multicast packets entering the interface during software switching.
Mcast pkts out	Number of outgoing multicast packets exiting the interface during software switching.
TTL Threshold	Number of multicast packets that reach the configured multicast time-to-live threshold.

Field	Description
VRF ID	
Handle	
Ref Count	Number of references to this interface structure in the MFIB process.
Route Count	
Handle	
Primary address	Primary IP address of the interface.
Secondary address	Secondary IP address of the interface.

show mfib mdt statistics

To display information about mdt interface activity, use the **show mfib mdt statistics** command in EXEC mode.

show mfib [*vrf vrf-name*] [*ipv4* | *ipv6*] **mdt statistics**

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

```
RP/0/0/CPU0:router# show mfib vrf svpn1 mdt statistics
```

```
MDT Interface Statistics
      Input Pkts      Input Bytes  Output Pkts      Output Bytes
      591548          591540546         0              0
```


show mfib nsf

To display the state of a nonstop forwarding (NSF) operation for the Multicast Forwarding Information Base (MFIB) line cards, use the **show mfib nsf** command in EXEC mode.

```
show mfib [ ipv4 | ipv6 ] nsf [ location node-id ]
```

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
location node-id	(Optional) Specifies the MFIB NSF designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show mfib nsf** command displays the current multicast NSF state for the MFIB process contained on all line cards and route processors (RPs) in the router.

For multicast NSF, the state may be one of the following:

- **Normal**—Normal operation: The MFIBs in the card contain only up-to-date MFIB entries.
- **Boot Card Booting**—Card is initializing and has not yet determined its NSF state.
- **Not Forwarding**—Multicast Forwarding Disabled: Multicast routing failed to recover from a failure-induced NSF state prior to the MFIB NSF timeout.
- **Non-stop Forwarding Activated**—Multicast NSF active: The router is operating in NSF mode while attempting to recover from a control-plane failure. In this mode, data is forwarded based on MFIB entries that are either updated by the recovered Multicast Routing Information Base (MRIB), or MFIB entries that were marked stale when NSF mode began. The times remaining until multicast NSF and multicast-unicast NSF expiration are displayed.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib nsf** command:

```
RP/0/0/CPU0:router# show mfib nsf

IP MFWD Non-Stop Forwarding Status:
  NSF Lifetime: 00:15:00

On node 0/1/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:54

On node 0/3/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:54

On node 0/4/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:53

On node 0/6/CPU0 :
Multicast routing state: Non-Stop Forwarding is activated
NSF Time Remaining: 00:14:53
```

[Table 4: show mfib nsf Field Descriptions, page 82](#) describes the significant fields shown in the display.

Table 4: show mfib nsf Field Descriptions

Field	Description
IP MFWD Non-Stop Forwarding Status	MFIB NSF status of each node in the system: booting, normal, not forwarding, or activated.
NSF Time Remaining	If MSB NSF is activated, the time remaining until NSF fails and all routes are deleted displays. Before timeout, MRIB signals that NSF (in the control plane) is finished and new, updated routes are populated in the MFIB (which makes the transition to Normal status).

Related Commands

Command	Description
nsf lifetime (IGMP/MLD)	Configures the maximum time for the NSF timeout value under IGMP or MLD.
nsf (multicast) , page 45	Configures the NSF capability for the multicast routing system.
nsf lifetime (PIM)	Configures the NSF timeout value for the PIM process.

Command	Description
show igmp nsf	Displays the state of NSF operation in IGMP.
show mrib nsf , page 106	Displays the state of NSF operation in the MRIB.
show pim nsf	Displays the state of NSF operation for PIM.

show mfib route

To display route entries in the Multicast Forwarding Information Base (MFIB), use the **show mfib route** command in EXEC mode.

show mfib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **route** [**rate** | **statistics** | * | *source-IP-address* | *group-IP-address* / *prefix-length* | **detail** | **old-output** | **summary** | **location** *node-id*]

Syntax Description

*	(Optional) Display shared tree entries.
<i>source-IP-address</i>	(Optional) IP address or hostname of the multicast route source. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .
<i>group-IP-address</i>	(Optional) IP address or hostname of the multicast group. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .
<i>/prefix-length</i>	(Optional) Group IP prefix length of the multicast group. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). Format is: <i>A.B.C.D/length</i> or <i>X:X::X/length</i> . A slash must precede the decimal value.
vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
detail	(Optional) Specifies detailed route information.
location <i>node-id</i>	(Optional) Specifies an MFIB-designated node.
old-output	(Optional) Displays the old show output—available for backward compatibility.
rate	(Optional) Displays individual (S, G) rates.
sources-only	(Optional) Restricts display of any shared-tree entries.
statistics	(Optional) Displays both hardware and software forwarding statistics.
summary	(Optional) Displays a brief list of the routing database.
tech-support	(Optional) Displays technical support information.

Command Default

IPv4 addressing is the default.

Command Modes EXEC

Command History	Release	Modification
	Release 3.2	This command was introduced.
	Release 3.5.0	The detail keyword was added. The vrf <i>vrf-name</i> keyword and argument were added.
	Release 3.8.0	MVPN extranet-related attributes were added to the output for this command when the vrf , statistics , and detail keywords are used.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

All entries in the MFIB table are derived from the Multicast Routing Information Base (MRIB). The flags have the same connotation as in the MRIB. The flags determine the forwarding and signaling behavior according to a set of forwarding rules for multicast packets. In addition to the list of interfaces and flags, each route entry shows various counters. Byte count is the number of total bytes forwarded. Packet count is the number of packets received for this entry.

The **show mfib counter** command displays global counters independent of the routes.

This command displays counters for the number of packets and bytes that are handled by software switching. Counters for packets processed by hardware are displayed by the appropriate **show mfib hardware** command.

The command displays the cumulative rates per route for all line cards in the Multicast Forwarding Information Base (MFIB) table when the **rate** keyword is used with the source and group IP addresses.

The command displays the rate per route for one line card in Multicast Forwarding Information Base (MFIB) table when the **statistics** keyword is used.

Task ID	Task ID	Operations
	multicast	read

Examples The following is sample output from the **show mfib route** command with the **location** keyword specified (the output fields are described in the header):

```
RP/0/0/CPU0:router# show mfib route location 0/1/CPU0
IP Multicast Forwarding Information Base Entry flags:
C - Directly-Connected Check, S - Signal, D - Drop,
IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
MH - MDT interface handle, CD - Conditional Decap,
DT - MDT Decap True
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
EG - Egress, EI - Encapsulation Interface, MI - MDT Interface SW/HW Forwarding Counts:
```

Packets in/Packets out/Bytes out SW Failure Counts: RPF / TTL / Empty Olist / Encap RL /
Other HW Drop Counts: Ingress / Egress HW Forwarding Rates: bps In/pps In/bps Out/pps Out

```
(* ,224.0.0.0/4), Flags: C
Last Used: 22:27:18
SW Forwarding Counts: 608/0/0
SW Failure Counts: 598/0/0/0
HW Forwarding Counts: 840/6460964/284000578
HW Drop Counts: N/A /N/A
HW Forwarding Rates: N/A /N/A /N/A /N/A
```

```
(* ,224.0.0.0/24), Flags: D
Last Used: never
SW Forwarding Counts: 0/0/0
SW Failure Counts: 0/0/0/0
HW Forwarding Counts: 0/6460964/284000578
HW Drop Counts: N/A /N/A
HW Forwarding Rates: N/A /N/A /N/A /N/A
```

.....

The following is sample output from the **show mfib route** command with the **summary** and **location** keywords specified:

```
RP/0/0/CPU0:router# show mfib route summary location 0/1/CPU0
```

```
IP Multicast Forwarding Information Base Summary
No. of (*,G) routes = 20015
No. of (S,G) routes = 20020
```

The following is sample output from the **show mfib route** command with the **statistics** and **location** keywords specified. For route *, 239.1.1.1, the hardware counters show N/A, which means no hardware statistic blocks were assigned to the route *, 239.1.1.1. However, routes 200.180.161.9 and 239.1.1.1 show that both hardware and software statistic blocks were assigned. The output fields are described in the header.

```
RP/0/0/CPU0:router# show mfib route statistics location 0/1/CPU0
```

```
IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
MH - MDT interface handle, CD - Conditional Decap,
DT - MDT Decap True
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
EG - Egress, EI - Encapsulation Interface, MI - MDT Interface
SW/HW Forwarding Counts: Packets in/Packets out/Bytes out
SW Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other
HW Drop Counts: Ingress / Egress
HW Forwarding Rates: bps In/pps In/bps Out/pps Out
```

```
(* ,224.0.0.0/4), Flags: C
Last Used: 03:24:50
SW Forwarding Counts: 9038/0/0
SW Failure Counts: 0/0/0/0
HW Forwarding Counts: N/A /N/A /N/A
HW Drop Counts: N/A /N/A
HW Forwarding Rates: N/A /N/A /N/A /N/A
```

```
(* ,224.0.0.0/24), Flags: D
Last Used: never
SW Forwarding Counts: 0/0/0
SW Failure Counts: 0/0/0/0
HW Forwarding Counts: N/A /N/A /N/A
HW Drop Counts: N/A /N/A
HW Forwarding Rates: N/A /N/A /N/A /N/A
```

```
(* ,239.1.1.1), Flags: C
Last Used: 03:24:48
SW Forwarding Counts: 3/0/0
SW Failure Counts: 0/0/0/0
```

```

HW Forwarding Counts: N/A /N/A /N/A
HW Drop Counts: N/A /N/A
HW Forwarding Rates: N/A /N/A /N/A /N/A

POS0/2/0/2 Flags: NS EG
POS0/2/0/1 Flags: NS EG

(200.180.161.9,239.1.1.1), Flags:
  Last Used: 00:01:08
  SW Forwarding Counts: 146/0/0
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: 61327/61327/3924928
  HW Drop Counts: 0/0
  HW Forwarding Rates: N/A /N/A /N/A /N/A
POS0/2/0/2 Flags: NS EG
POS0/2/0/1 Flags: A EG

(*,239.1.1.2), Flags: C
  Last Used: 03:24:37
  SW Forwarding Counts: 7/0/0
  SW Failure Counts: 0/0/0/0
  HW Forwarding Counts: N/A /N/A /N/A
  HW Drop Counts: N/A /N/A
  HW Forwarding Rates: N/A /N/A /N/A /N/A

```

The following output displays the MVPN extranet attributes entry and interfaces, as well as the count of egress interfaces, when using the **vrf**, **detail**, and **location** keywords.

If a route has a forwarding MDT interface from an extranet receiver VRF, the encapsulation information for that receiver VRF appears in the display, as well as the RPF table ID (shown in boldface in the example).

```
RP/0/0/CPU0:router# show mfib vrf vrf15 route 18.18.15.2 225.0.0.1 location 0/3/CPU0 detail
```

```

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
  IA - Inherit Accept, IF - Inherit From, MA - MDT Address,
  ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
  MH - MDT interface handle, CD - Conditional Decap,
  DT - MDT Decap True, EX - Extranet
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
  NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
  EG - Egress, EI - Encapsulation Interface, MI - MDT Interface,
  EX - Extranet
Forwarding Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other

(18.18.15.2,225.0.0.1), Flags: EX, FMA: 0x80000 ,
TID: 0xe000000f
Up: 00:17:41
Last Used: never
SW Forwarding Counts: 0/0/0
SW Failure Counts: 0/0/0/0/0
Route ver: 0x2fb5
MVPN Info :-
  Associated Table ID : 0xe0000000
  MDT Handle: 0x9046380, MDT Probe:Y [Y], Rate:N, Acc:N
  MDT SW Egress decap: 0
  Encap : (5.5.5.5,232.101.1.16/32) , Rate: 0 Kbps / 0 bps
  EG count: 1
mdtvrf16 Flags: F NS MI EX, Up:00:16:25
GigabitEthernet0/3/0/2.216 Flags: NS EG EX, Up:00:17:41
GigabitEthernet0/3/0/2.15 Flags: A NS, Up:00:17:41

```

Related Commands

Command	Description
show mfib counter , page 52	Displays Multicast Forwarding Information Base (MFIB) counter statistics for packets that have dropped.

Command	Description
show mfib hardware route olist , page 67	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mrrib route , page 109	Displays all entries in the Multicast Routing Information Base (MRIB).

show mfib table-info

To display Multicast Forwarding Information Base (MFIB) table information, use the **show mfib table-info** command in EXEC mode.

```
show mfib [ ipv4 | ipv6 ] table-info { table-id | vrf-name } [ local | remote ] [ location node-id ]
```

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
<i>table-id</i>	Specifies the table identifier. Range is 0 to 4294967295.
<i>vrf-name</i>	Specifies the VRF name.
local	Specifies local tables only.
remote	Specifies remote tables only.
location node-id	(Optional) Specifies MFIB connections associated with an interface of the designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.6.0	The local and remote keywords were added.
Release 3.8.0	MVPN extranet attributes were added to the output for this command.
Release 3.9.0	A new field was added to the output to display per-VRF MDT source information.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mfib table-info** command showing the number of receiver VRF routes and the default MDT handle associated with this VRF in boldface. The default MDT encap field shows the results of a VRF-override.

```
RP/0/0/CPU0:router#show mfib table-info vrf 101
```

```
Table Name       : vrf15
VRid/TID/VID     : 0x0 / 0xe000000f / 0x6000000f
Table type       : TBL_TYPE_NAME_VID
Active/Linked    : Y /-Y
Prev Table ID    : 0x0
Location         : Local
Local ifcount    : 2
Child routes     : (5.5.5.5, 225.101.1.15/32)
Default MDT Encap : (*, */32)
Default MDT Handle : 0x0 (Ha0x0)
```

```
MDT Master LC    : Y
Loopback (Encap Src) : 0x9000180 (Loopback0)
Local EG intf cnt : 508
Data MDT         : Acl - (-), All vrf routes N, 0 Kbps
```

[Table 5: show mfib table-info Field Descriptions, page 90](#) describes the significant fields shown in the display.

Table 5: show mfib table-info Field Descriptions

Field	Description
Table Name	Name of the MFIB table.
VRid/TID/VID	Table identifiers.
Table type	Type of MFIB table.
Active/Linked	Table is active and linked.
Location	Location of the MFIB table.
Local ifcount	Local interface count.
Child routes	Child routes shows the number of extranet routes in receiver VRFs that reference this source VRF.
Default MDT Encap	Default MDT encapsulation. When so specified, shows the source MDT information for a per-VRF configuration
Default MDT Handle	Default MDT interface handle for this VRF.

Field	Description
MDT Master LC	Field contains "Y" if this line card is a master line card for this VRF.
Loopback (Encap Src)	Loopback (encapsulation source).
Local EG intf cnt	Shows the number of local egress interfaces for this VRF and location.
Data MDT	Routes for which multicast data for a multicast distribution tree (MDT) was triggered.

show mhost default-interface

To display the active default interface for the Multicast Host (MHost) process, use the **show mhost default-interface** command in EXEC mode.

show mhost [ipv4 | ipv6] default-interface

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs.

The **show mhost default-interface** command is used to show both the configured and active MHost default interfaces. The configured interface is the one specified by the **mhost default-interface** command; otherwise, the configured interface is displayed as none.

The active interface is the one currently being used as the default. The active interface may differ from the one configured when multicast routing is enabled and the configured interface is not operational. This command is useful when applications such as auto-rendezvous point (Auto-RP), ping, or MTrace are not functioning as expected.

Task ID

Task ID	Operations
network	read

Examples

The following is sample output for the **show mhost default-interface** command that shows that loopback interface 0 was configured as the MHost default interface, and it is the active default interface:

```
RP/0/0/CPU0:router# show mhost default-interface
mhost configured default interface is 'Loopback0'
mhost active default interface is 'Loopback0'
```

Related Commands

Command	Description
mhost default-interface , page 39	Configures the default interface for IP multicast transmission and reception to and from the host stack.

show mhost groups

To display various multicast groups joined directly on the interface, use the **show mhost groups** command in EXEC mode.

show mhost [**ipv4** | **ipv6**] **groups** *type interface-path-id* [**location** *node-id*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
location <i>node-id</i>	(Optional) Specifies a designated node.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show mhost groups** command is used to display the groups joined by applications and verifies that the MHost application is functioning properly.

Task ID

Task ID	Operations
network	read

Examples

The following is sample output from the **show mhost groups** command that shows the MHost groups 239.1.1.1, 224.0.0.22, 224.0.0.2, 224.0.0.1, 224.0.0.13, and 224.0.1.40 have joined on loopback 0 interface:

```
RP/0/0/CPU0:router# show mhost groups loopback 0

Loopback 0
239.1.1.1 : includes 1, excludes 0, mode INCLUDE
33.3.3.3 : includes 1, excludes 0, active in INCLUDE filter
224.0.0.22 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.0.2 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.0.1 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.0.13 : includes 0, excludes 1, mode EXCLUDE
<no source filter>
224.0.1.40 : includes 0, excludes 2, mode EXCLUDE
<no source filter>
```

[Table 6: show mhost groups Field Descriptions, page 95](#) describes the significant fields shown in the display.

Table 6: show mhost groups Field Descriptions

Field	Description
includes	Number of source addresses in the include list.
excludes	Number of source addresses in the exclude list.
mode	Multicast socket filter mode: include or exclude.
33.3.3.3	Source address list to be included or excluded based on the multicast filter mode.

Related Commands

Command	Description
show mfib hardware route accept-bitmap, page 60	Displays platform-specific Multicast Forwarding Information Base (MFIB) information for the interface list that accepts bidirectional routes.
show mfib hardware route olist, page 67	Displays platform-specific Multicast Forwarding Information Base (MFIB) information in the output interface list (olist) stored in the hardware.
show mfib hardware route summary, page 71	Displays summary platform-specific Multicast Forwarding Information Base (MFIB) hardware information for each route entry.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).

show mrib client

To display the state of the Multicast Routing Information Base (MRIB) client connections, use the **show mrib client** command in EXEC mode.

```
show mrib [ vrf vrf-name ] [ ipv4 | ipv6 ] [old-output] client [filter] [ client-name ]
```

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
old-output	(Optional) Displays the old show output—available for backward compatibility.
filter	(Optional) Displays route and interface level flag changes that various MRIB clients have registered and shows what flags are owned by the MRIB clients.
<i>client-name</i>	(Optional) Name of a multicast routing protocol that acts as a client of MRIB, such as Protocol Independent Multicast (PIM) or Internet Group Management Protocol (IGMP).

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	The vrf <i>vrf-name</i> keyword and argument were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib client** command using the **filter** option:

```
RP/0/0/CPU0:router# show mrib client filter

IP MRIB client-connections
igmp:417957 (connection id 0)
  ownership filter:
    interface attributes: II ID LI LD
    groups:
      include 0.0.0.0/0
    interfaces:
      include All
pim:417959 (connection id 1)
  interest filter:
    entry attributes: E
    interface attributes: SP II ID LI LD
    groups:
      include 0.0.0.0/0
    interfaces:
      include All
  ownership filter:
    entry attributes: L S C IA IF D
    interface attributes: F A IC NS DP DI EI
    groups:
      include 0.0.0.0/0
    interfaces:
      include All
bcdl_agent:1 (connection id 2)
  interest filter:
    entry attributes: S C IA IF D
    interface attributes: F A IC NS DP SP EI
    groups:
      include 0.0.0.0/0
    interfaces:
      include All
  ownership filter:
    groups:
      include 0.0.0.0/0
    interfaces:
      include All
```

[Table 7: show mrib client Field Descriptions, page 97](#) describes the significant fields shown in the display.

Table 7: show mrib client Field Descriptions

Field	Description
igmp	Name of the client.
417957	Personal identifier (PID) or a unique ID assigned by MRIB.
(connection id 0)	Unique client connection identifier.
ownership filter:	Specifies all the route entry and interface-level flags that are owned by the client. As the owner of the flag, only the client can add or remove the flag. For example, only the Internet Group Management Protocol (IGMP) client can add the II flag on an interface. MRIB does not allow a non-owner to register or modify the same flag.

Field	Description
groups: include 0.0.0.0/0 interfaces: include All	Groups and interfaces registered by the clients consisting of two lists. One is an include list (items for which the client requests to be notified.) The use of “All” implies all interfaces and 0.0.0.0/0 to indicate all groups. Not shown in this example is the exclude list. This list contains items for which the client requests not to be notified when modifications occur.
interface attributes: II ID LI LD	Interface-level flags set on the interface belong to a route.
interest filter:	Specifies all the flags, groups, and interfaces from which the client requests information. When a flag of interest for a client is modified, the client is notified.
entry attributes: S C IA IF D	Entry-level flags that are set on the route.

Related Commands

Command	Description
show mfib nsf, page 81	Displays the state of a nonstop forwarding (NSF) operation for the Multicast Forwarding Information Base (MFIB) line cards.
show mfib route, page 84	Displays route entries in the Multicast Forwarding Information Base (MFIB).
show mrib nsf, page 106	Displays the state of nonstop forwarding (NSF) operation in the Multicast Routing Information Base (MRIB).

show mrib mdt-interface

To verify that the Multicast Routing Information Base (MRIB) has correctly learned multicast distribution tree (MDT) interface handles from Protocol Independent Multicast (PIM) and that it shows the corresponding table ID for each handle, use the **show mrib mdt-interface** command in EXEC mode.

show mrib mdt-interface [**detail** | **ifh**]

Syntax Description

detail	(Optional) Shows the dependent VRF routes for the MDT interface handles learned from PIM.
ifh	(Optional) Specifies the mapping for a particular MDT interface handle learned from PIM.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

You can use the **show mrib mdt-interface** command to help debug an MVPN route collapse in MRIB when Extranet VRF dependencies are introduced. For example, MRIB may learn about a route update from PIM with an MDT handle associated with a different VRF table than the source VRF table. This database can then be useful in verifying that the MDT handle for the dependent VRF has been learned correctly.

Task ID

Task ID	Operations
multicast	read

Examples

The following example illustrates detailed output from the **show mrib mdt-interface** command with the MDT interface handle name shown in parentheses in the output (mdtgreen):

```
RP/0/0/CPU0:router# show mrib mdt-interface detail
```

```
Fri Dec 12 00:12:16.001 UTC
```

```
IP Multicast MRIB MDT ifhandle Interface DB
```

```
MH - Handle update count, I - Intranet route count, EX - Extranet route count, Up - Uptime
```

```

0x9042b80(mdtvrf20)  TID:0xe0000014  MH:1  I:0  EX:0  Up:6d01h
    MDT route forward-reference DB:
0x9042c80(mdtvrf19)  TID:0xe0000013  MH:1  I:0  EX:0  Up:6d01h
    MDT route forward-reference DB:
0x9042d80(mdtvrf11)  TID:0xe000000b  MH:1  I:0  EX:0  Up:6d01h
    MDT route forward-reference DB:
0x9042e80(mdtvrf10)  TID:0xe000000a  MH:1  I:250  EX:0  Up:6d01h
    MDT route forward-reference DB:
    (18.18.10.2,232.0.0.1/32) [tid:0xe000000a] recollapse: FALSE
    (18.18.10.2,232.0.0.2/32) [tid:0xe000000a] recollapse: FALSE
    (18.18.10.2,232.0.0.3/32) [tid:0xe000000a] recollapse: FALSE
    (18.18.10.2,232.0.0.4/32) [tid:0xe000000a] recollapse: FALSE
...

```

[Table 8: show mrib mdt-interface Field Descriptions, page 100](#) describes the significant fields shown in the display.

Table 8: show mrib mdt-interface Field Descriptions

Field	Description
TID, tid	VRF table ID associated with the MDT handle.
MH	Number of times the MDT interface handle has been received. Used for debugging, because it allows you to identify duplicate updates. Under normal conditions, the value should be 1.
I	Number of intranet routes using a specific MDT interface handle.
EX	Number of extranet routes using a specific MDT interface handle.
Up	Uptime—Elapsed time since MDT interface handle was learned.
recollapse	Set to TRUE in situations where the MDT information (such as default MDT group or MDT interface handle) for a dependent VRF table was not received from PIM during a route collapse. The route will be “recollapsed” when all the dependent information is received.

When you use the **detail** keyword, the output displays dependent VRF routes. Otherwise, only the MDT interface mappings appear.

Related Commands

Command	Description
show mrib route-collapse, page 113	Displays the contents of the Multicast Routing Information Base (MRIB) route-collapse database.

show mrib mpls forwarding

To display the Multicast Routing Information Base (MRIB) MPLS forwarding table information of all tunnels, use the **show mrib mpls forwarding** command in EXEC mode.

show mrib mpls forwarding [**detail** | **labels** | **s2l** | **source** | **summary** | **tunnels**]

Syntax Description

detail	Provides the detail information of each tunnel.
labels	Filters based on label.
s2l	Filters based on s2l.
source	Filters based on source PE address.
summary	Displays the summary output of entries.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is a sample output from the **show mrib mpls forwarding** command:

```
RP/0/0/CPU0:router# show mrib mpls forwarding

LSP information (RSVP-TE) :
  Name: tunnel-mte26 Role: Head State: binding
  TUNNEL-ID: 26 P2MP-ID: 26 LSP-ID: 10012
  Source Address: 192.1.1.1 Extended-ID: 192.1.1.1(0xc0010101)

  Incoming Label      : (16008)
  Transported Protocol : IPv4
```

show mrib mpls forwarding

```

Explicit Null      : IPv6 Explicit Null
IP lookup          : enabled

Outsegment Info #1 [Head/Push]:
  Outgoing Label: 16008  Outgoing IF: GigabitEthernet0/0/0/5(P)  Outgoing Node ID: 0x1
  Nexthop: 192.14.1.44

```

```

LSP information (RSVP-TE) :
  Name: tunnel-mte27 Role: Head State: binding
  TUNNEL-ID: 27  P2MP-ID: 27  LSP-ID: 10012
  Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

  Incoming Label      : (16007)
  Transported Protocol : IPv4
  Explicit Null       : IPv6 Explicit Null
  IP lookup           : enabled
  Platform information : FGID: 51075, 51076 frr_slotmask: 0x1

  Outsegment Info #1 [Head/Push]:
    Outgoing Label: 16007  Outgoing IF: GigabitEthernet0/0/0/5(P)  Outgoing Node ID: 0x1
    Nexthop: 192.14.1.44

```

The following is a sample output from the **show mrib mpls forwarding** command with the detail keyword:

```
RP/0/0/CPU0:router# show mrib mpls forwarding tunnel 27 detail
```

```

LSP information (RSVP-TE) :
  Name: ----- Role: Bud
  TUNNEL-ID: 27  P2MP-ID: 27  LSP-ID: 10002
  Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

  Incoming Label      : 16001
  Transported Protocol : IPv4
  Explicit Null       : IPv6 Explicit Null
  IP lookup           : enabled
  Platform information : FGID: 44045, 44046 frr_slotmask: 0x24

  Outsegment Info #1 [Tail/Pop]:
    No info.
  Outsegment Info #2 [Mid/Swap]:
    Outgoing Label: 16001  Outgoing IF: GigabitEthernet0/5/0/6(P)  Outgoing Node ID:
0x51  Nexthop: 192.168.12.2
  Outsegment Info #3 [Mid/Swap]:
    Outgoing Label: 16001  Outgoing IF: GigabitEthernet0/2/0/4(P)  Outgoing Node ID:
0x21  Nexthop: 192.168.13.2

```

```
RP/0/0/CPU0:router# show mrib mpls forwarding tunnel 26 detail
```

```

LSP information (RSVP-TE) :
  Name: ----- Role: Tail
  TUNNEL-ID: 26  P2MP-ID: 26  LSP-ID: 10012
  Source Address: 192.1.1.1  Extended-ID: 192.1.1.1(0xc0010101)

  Incoming Label      : 16008
  Transported Protocol : IPv4
  Explicit Null       : IPv6 Explicit Null
  IP lookup           : enabled
  Platform information : FGID: 51082, 51083 frr_slotmask: 0x0
  Outsegment Info #1 [Tail/Pop]:
    No info.

```

show mrib mpls route

To display the Multicast Routing Information Base (MRIB) multicast groups to tunnels mappings, use the **show mrib mpls route** command in EXEC mode.

show mrib mpls route [**interface** | **summary**]

Syntax Description	interface	(Optional) Specify the type of interface.
	summary	(Optional) Displays the summary information.
Command Default	None	
Command Modes	EXEC	
Command History	Release	Modification
	Release 3.9.0	This command was introduced.
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.	
Task ID	Task ID	Operations
	multicast	read

Examples

The following is a sample output from the **show mrib mpls route** command:

```
RP/0/0/CPU0:router# show mrib mpls route
Tunnel Interface: tunnel-mte28
(192.19.1.9, 239.232.2.1) (192.19.1.9, 239.232.2.2) (192.19.1.9, 239.232.2.3)
Tunnel Interface: tunnel-mte27
(192.19.1.9, 239.232.1.1) (192.19.1.9, 239.232.1.2) (192.19.1.9, 239.232.1.3)
Tunnel Interface: tunnel-mte26
(192.19.1.9, 239.232.0.1) (192.19.1.9, 239.232.0.2) (192.19.1.9, 239.232.0.3)
```

show mrib mpls traffic-eng fast-reroute

To display the Multicast Routing Information Base (MRIB) MPLS traffic engineering fast reroute information, use the **show mrib mpls traffic-eng fast-reroute** command in EXEC mode.

show mrib mpls traffic-eng fast-reroute database { backup-interface | labels | role | state | summary }

Syntax Description

database	Displays the fast reroute database information.
backup-interface	(Optional) Filter based on backup outgoing interface
labels	(Optional) Filter based on incoming label
role	(Optional) Filter based on LSPs with specified role
state	(Optional) Filter based on LSPs with specified FRR (fast-reroute) state
summary	(Optional) Summary of total active and ready FRR states in MRIB

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is a sample output from the **show mrib mpls traffic-eng fast-reroute** command:

```
RP/0/0/CPU0:router# show mrib mpls traffic-eng fast-reroute database

LSP midpoint item frr information:
ExtTunId/TunId/P2MPId/LSPId  In Lbl  Out intf/Lbl  FRR intf/Lbl  Status
-----
192.192.5.3/3001/3001/10002  16513  Te0/5/0/0:17028  tt21:17028  Ready
```


192.192.5.3/3002/3002/10002	16514	Te0/5/0/5:1048564	tt24:1048564	Ready
		Te0/5/0/0:17029	tt21:17029	Ready
		Te0/5/0/5:1048565	tt24:1048565	Ready
192.192.5.3/3003/3003/10002	16515	Te0/5/0/0:17030	tt21:17030	Ready
		Te0/5/0/5:1048566	tt24:1048566	Ready
192.192.5.3/3004/3004/10002	16516	Te0/5/0/0:17031	tt21:17031	Ready
		Te0/5/0/5:1048567	tt24:1048567	Ready
192.192.5.3/3005/3005/10002	16517	Te0/5/0/0:17032	tt21:17032	Ready
		Te0/5/0/5:1048568	tt24:1048568	Ready
192.192.5.3/3006/3006/10002	16518	Te0/5/0/0:17033	tt21:17033	Ready
		Te0/5/0/5:1048569	tt24:1048569	Ready
192.192.5.3/3007/3007/10002	16519	Te0/5/0/0:17034	tt21:17034	Ready

show mrib nsf

To display the state of nonstop forwarding (NSF) operation in the Multicast Routing Information Base (MRIB), use the **show mrib nsf** command in EXEC mode.

show mrib [ipv4 | ipv6] [old-output] nsf

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
old-output	(Optional) Displays the old show output—available for backward compatibility.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show mrib nsf** command displays the current multicast NSF state for the MRIB. The state may be normal or activated for NSF. The activated state indicates that recovery is in progress due to a failure in MRIB or Protocol Independent Multicast (PIM). The total NSF timeout and time remaining are displayed until NSF expiration.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib nsf** command:

```
RP/0/0/CPU0:router# show mrib nsf

IP MRIB Non-Stop Forwarding Status:
Multicast routing state: Non-Stop Forwarding Activated
NSF Lifetime: 00:03:00
NSF Time Remaining: 00:01:40
```

Table 9: show mrib nsf Field Descriptions, [page 107](#) describes the significant fields shown in the display.

Table 9: show mrib nsf Field Descriptions

Field	Description
Multicast routing state	Multicast NSF status of the MRIB (Normal or NSF Activated).
NSF Lifetime	Timeout for MRIB NSF, computed as the maximum of the PIM and Internet Group Management Protocol (IGMP) NSF lifetimes, plus 60 seconds.
NSF Time Remaining	If MRIB NSF state is activated, the time remaining until MRIB reverts to Normal mode displays. Before this timeout, MRIB receives notifications from IGMP and PIM, triggering a successful end of NSF and cause the transition to normal state. If notifications are not received, the timer triggers a transition back to normal mode, causing new routes to download to MFIB and old routes to be deleted.

Related Commands

Command	Description
nsf (multicast) , page 45	Configures the NSF capability for the multicast routing system.
nsf lifetime (IGMP/MLD)	Configures the maximum time for the NSF timeout value under IGMP or MLD.
nsf lifetime (PIM)	Configures the NSF timeout value for the PIM process.
show igmp nsf	Displays the state of NSF operation in IGMP.
show mfib nsf , page 81	Displays the state of NSF operation in the MFIB line cards.
show pim nsf	Displays the state of NSF operation for PIM.

show mrib platform trace

To display platform-specific data for the Multicast Routing Information Base (MRIB), use the **show mrib platform trace** command in EXEC mode.

show mrib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] **platform trace** [**file** | **hexdump** | **last** | **reverse** | **stats** | **tailf** | **unique** | **verbose** | **wrapping**] [**location** *all* | *node-id*]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

Command Modes

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following example shows a sample output of **show mrib platform trace** command:

```
RP/0/0/CPU0:router#show mrib platform trace
2 wrapping entries (512 possible, 0 filtered, 2 total)
```

show mrib route

To display all entries in the Multicast Routing Information Base (MRIB), use the **show mrib route** command in EXEC mode.

show mrib [**vrf** *vrf-name*] [**ipv4** | **ipv6**] [**old-output**] **route** [**summary** | **outgoing-interface**] [* | *source-address*] [*group-address* [/ *prefix-length*]] [**detail**]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
*	(Optional) Displays shared tree entries.
<i>source-address</i>	(Optional) Source IP address or hostname of the MRIB route. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .
<i>group-address</i>	(Optional) Group IP address or hostname of the MRIB route. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .
<i>/prefix-length</i>	(Optional) Prefix length of the MRIB group address. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .
outgoing-interface	(Optional) Displays the outgoing-interface information.
summary	(Optional) Displays a summary of the routing database.
detail	(Optional) Displays the routing database with the platform data.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was introduced.
Release 3.2	This command was introduced.

Release	Modification
Release 3.4.0	The detail keyword was added.
Release 3.5.0	The vrf vrf-name keyword and argument were added.
Release 3.8.0	MVPN extanet attributes were added to the detailed output for this command.
Release 3.7.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Each line card has an individual Multicast Forwarding Information Base (MFIB) table. The MFIB table maintains a subset of entries and flags updated from MRIB. The flags determine the forwarding and signaling behavior according to a set of forwarding rules for multicast packets. In addition to the list of interfaces and flags, each route entry shows various counters. Byte count is the number of total bytes forwarded. Packet count is the number of packets received for this entry.

The [show mfib counter, page 52](#) command displays global counters independent of the routes.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib route** command (the output fields are described in the header):

```
RP/0/0/CPU0:router# show mrib route
```

```
IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
             C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
             IF - Inherit From, D - Drop, MA - MDT Address, ME - MDT Encap,
             MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
             CD - Conditional Decap
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
                NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
                II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
                LD - Local Disinterest, DI - Decapsulation Interface
                EI - Encapsulation Interface, MI - MDT Interface

(*,224.0.0.0/4) RPF nbr: 10.11.1.20 Flags: L C
  Outgoing Interface List
  Decapstunnel0 Flags: NS

(*,224.0.0.0/24) Flags: D

(*,224.0.1.39) Flags: S

(*,224.0.1.40) Flags: S
  Outgoing Interface List
  POS0/3/0/0 Flags: II LI

(*,238.1.1.1) RPF nbr: 10.11.1.20 Flags: C
```

```

Outgoing Interface List
POS0/3/0/0 Flags: F NS LI
Decapstunnel0 Flags: A

(*,239.1.1.1) RPF nbr: 10.11.1.20 Flags: C
Outgoing Interface List
POS0/3/0/0 Flags: F NS
Decapstunnel0 Flags: A

```

The following shows output when the **vrf** and **detail** keywords are used:

```

RP/0/0/CPU0:router# show mrib vrf vrf1 route detail

IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
             C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
             IF - Inherit From, D - Drop, MA - MDT Address, ME - MDT Encap,
             MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
             CD - Conditional Decap, MPLS - MPLS Decap, MF - MPLS Encap, EX - Extranet
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
                NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
                II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
                LD - Local Disinterest, DI - Decapsulation Interface
                EI - Encapsulation Interface, MI - MDT Interface, LVIF - MPLS Encap,
                EX - Extranet

(*,0.0.0.101) Ver: 0x818 Flags: MA, FMA: 0x0
MDT Address: 5.5.5.5
Up: 6d01h

(*,0.0.0.102) Ver: 0x5337 Flags: MA, FMA: 0x0
MDT Address: 225.101.1.1
Up: 6d01h

(*,0.0.0.103) Ver: 0x6cea Flags: ML, FMA: 0x0
Master Linecard Slot: 0/3/CPU0
Up: 6d01h

(*,0.0.0.104) Ver: 0x7ca Flags: MBH, FMA: 0x0
BGP IFH: 0x9000180
Up: 6d01h

(*,0.0.0.105) Ver: 0x5b67 Flags: MLF, FMA: 0x0
Master Linecard Fallback Slot: 0/3/CPU0
Up: 6d01h

(*,0.0.0.107) Ver: 0x382c Flags: MDT_IFH, FMA: 0x0
Up: 6d01h
MDT IFH: 0x9043d80
...

```

The following example shows detailed output for a source VRF route in a receiver on the source PE router in an MVPN extranet topology), with the MDT core tree ID of the receiver VRF displayed.

```

RP/0/0/CPU0:router# show mrib vrf vrf15 route 18.18.15.2 225.0.0.1 detail

IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
             C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
             IF - Inherit From, D - Drop, MA - MDT Address, ME - MDT Encap,
             MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
             CD - Conditional Decap, MPLS - MPLS Decap, MF - MPLS Encap, EX - Extranet
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
                NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
                II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
                LD - Local Disinterest, DI - Decapsulation Interface
                EI - Encapsulation Interface, MI - MDT Interface, LVIF - MPLS Encap,
                EX - Extranet

```

Related Commands

Command	Description
nsf lifetime (IGMP/MLD)	Configures the maximum time for the NSF timeout value on the IGMP.
show mfib counter, page 52	Displays MFIB counter statistics for packets that have dropped.
show mrib route-collapse, page 113	Displays the contents of the MRIB route collapse database.
show mrib mdt-interface, page 99	Helps in troubleshooting whether or not MRIB has correctly learned the MDT interface handles from PIM, and whether or not the corresponding table ID for each handle is shown.
show mfib route, page 84	Displays all entries in the MFIB table.

show mrib route-collapse

To display the contents of the Multicast Routing Information Base (MRIB) route-collapse database, use the **show mrib route-collapse** command in EXEC mode.

```
show mrib [ vrf vrf-name ] [ ipv4 | ipv6 ] route-collapse [ core-tree ]
```

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
<i>core-tree</i>	(Optional) IPv4 Multicast Distribution Tree (MDT) group address.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.8.0	MVPN extanet attributes were added to the output for this command.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

In the following example, identical prefixes from an extranet deployment receiver VRF and the source VRF are inserted into the route-collapse database, with the table ID shown in boldfaced brackets:

```
RP/0/0/CPU0:router# show mrib route-collapse 225.101.1.14
225.101.1.14 TID: 0xe000000e RMT TID: 0x0 TLC TID: 0xe000000e RMT TLC TID: 0x0
Customer route database count: 15
(18.18.15.2,232.0.0.1/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.2/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.3/32) [tid 0xe000000e]
```

```

(18.18.15.2,232.0.0.4/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.5/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.6/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.7/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.8/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.9/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.10/32) [tid 0xe000000e]
(18.18.15.2,232.0.0.1/32) [tid 0xe000000f]
(18.18.15.2,232.0.0.2/32) [tid 0xe000000f]
(18.18.15.2,232.0.0.3/32) [tid 0xe000000f]
(18.18.15.2,232.0.0.4/32) [tid 0xe000000f]
(18.18.15.2,232.0.0.5/32) [tid 0xe000000f]
Core route database count: 2
(*,225.101.1.14/32)
(3.3.3.3,225.101.1.14/32)
Core egress node database count: 1
nodeid      slot      Refcount/Remote/NSF Remote
0x30        0/3/CPU0      1/N/N

```

This output contains self-documenting header information with the exception of the information in [Table 10: show mrib route collapse Field Descriptions](#), page 114.

Table 10: show mrib route collapse Field Descriptions

Field	Descriptions
Route-Collapse CTID	Identifies the receiver VRF MDT group
EX	Extranet
MDT IFH	MDT interface handle
FMA	Fabric Multicast Address
Up	Uptime
RPF TID	Reverse-path forwarding table ID
Incoming Interface List	Identifies the incoming interfaces
Outgoing Interface List	Identifies the outgoing interfaces

Related Commands

Command	Description
show mrib route , page 109	Displays all entries in the Multicast Routing Information Base (MRIB).

show mrib route outgoing-interface

To display the outgoing-interface information on the Multicast Routing Information Base (MRIB), use the **show mrib route outgoing-interface** command in EXEC mode.

show mrib route outgoing-interface [* | *source-address*] [*group-address* [/ *prefix-length*]]

Syntax Description

<i>*</i>	(Optional) Displays shared tree entries.
<i>A.B.C.D</i>	(Optional) Source IP address or hostname of the MRIB route. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .
<i>A.B.C.D</i>	(Optional) Group IP address or hostname of the MRIB route and the prefix length.
<i>/prefix-length</i>	(Optional) Prefix length of the MRIB group address. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash must precede the decimal value. Format is: <i>A.B.C.D</i> or <i>X:X::X</i> .

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib route outgoing-interface** command:

```
RP/0/0/CPU0:router# show mrib route outgoing-interface
IP Multicast Routing Information Base
```

show mrib route outgoing-interface

Entry flags: L - Domain-Local Source, E - External Source to the Domain,
 C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
 IF - Inherit From, D - Drop, MA - MDT Address, ME - MDT Encap,
 MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
 CD - Conditional Decap, MPLS - MPLS Decap, MF - MPLS Encap, EX - Extranet
 MoFE - MoFRR Enabled, MoFS - MoFRR State

```
(*,224.0.0.0/4), Up:6d10h, OIF count:0, flags: C
(*,224.0.0.0/24), Up:6d10h, OIF count:0, flags: D
(*,224.0.1.39), Up:6d10h, OIF count:3, flags: S
(10.1.1.1,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.2.2.2,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.3.3.3,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.4.4.4,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.5.5.5,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.6.6.6,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.7.7.7,224.0.1.39), Up:00:04:17, OIF count:11, flags:
(10.8.8.8,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.9.9.9,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.10.10.10,224.0.1.39), Up:6d10h, OIF count:11, flags:
(10.21.21.21,224.0.1.39), Up:6d06h, OIF count:11, flags:
(*,224.0.1.40), Up:6d10h, OIF count:2, flags: S
(10.1.1.1,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.2.2.2,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.6.6.6,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.13.4.3,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.14.4.4,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.14.8.4,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.21.21.21,224.0.1.40), Up:6d06h, OIF count:11, flags:
(10.23.4.3,224.0.1.40), Up:00:02:38, OIF count:11, flags:
(10.23.8.3,224.0.1.40), Up:00:02:38, OIF count:11, flags:
(10.34.4.3,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.34.8.3,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.35.4.3,224.0.1.40), Up:00:02:38, OIF count:11, flags:
(10.35.4.5,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.38.4.8,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.45.4.5,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.49.4.9,224.0.1.40), Up:6d10h, OIF count:11, flags:
(10.105.4.10,224.0.1.40), Up:6d10h, OIF count:11, flags:
(*,225.0.0.0/8), Up:6d06h, OIF count:0, flags: C
(*,226.0.0.0/8), Up:6d06h, OIF count:0, flags: C
(*,232.0.0.0/8), Up:6d10h, OIF count:0, flags: D
(10.6.6.6,232.1.1.1), Up:6d10h, OIF count:3, flags:
(10.7.7.7,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.8.8.8,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.9.9.9,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.10.10.10,232.1.1.1), Up:6d10h, OIF count:2, flags:
(10.21.21.21,232.1.1.1), Up:6d06h, OIF count:3, flags:
```

Related Commands

Command	Description
show mrib route, page 109	Displays all entries in the Multicast Routing Information Base (MRIB).

show mrib table-info

To display Multicast Routing Information Base (MRIB) table information, use the **show mrib table-info** command in EXEC mode.

show mrib [*vrf vrf-name*] [**ipv4** | **ipv6**] **table-info**

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.8.0	New MVPN extranet attributes were added to command output.
Release 3.9.0	A new field was added to the command output to display per-VRF MDT source information.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib table-info** command:

```
RP/0/0/CPU0:router# show mrib vrf vrf101 table-info
VRF: default [tid 0xe0000000]
Registered Client:
  igmp [ccbid: 0 cltid: 4485366]
  pim [ccbid: 1 cltid: 4485368]
```

```

bcdl_agent [ccbid: 2 cltid: 1]
msdp [ccbid: 3 cltid: 8827135]

```

Table 11: show mrib table-info Field Descriptions

Field	Description
VRF	Default VRF or a VRF configured for the purpose of an override in MVPN.
cltid	Client ID.
bcdl_agent	A process like igmp and pim, which is used to download routes to line card.
MDT handle	MDT interface handle for this VRF.
MDT group	Default MDT group associated with this VRF.
MDT source	Per-VRF MDT source information.

Related Commands

Command	Description
show mrib tlc, page 119	Displays the contents of the Multicast Routing Information Base (MRIB) table-line card (TLC) database.

show mrib tlc

To display the contents of the Multicast Routing Information Base (MRIB) table-line card (TLC) database, use the **show mrib tlc** command in EXEC mode.

show mrib [*vrf vrf-name*] [**ipv4** | **ipv6**] **tlc** [**remote**]

Syntax Description

vrf <i>vrf-name</i>	(Optional) Specifies a VPN routing and forwarding (VRF) instance.
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
remote	(Optional) Displays the linked remote entry.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.6.0	The remote keyword was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show mrib tlc** command:

```
RP/0/0/CPU0:router# show mrib tlc
```

```
VRF: default [tid 0xe0000000]
Master LC slot: Not selected
Associated MDT group: 0
Forwarding LC node: 0
```

[Table 12: show msdp peer Field Descriptions, page 120](#) describes the significant fields shown in the display.

Table 12: show msdp peer Field Descriptions

Field	Description
Associated MDT group	IP address of the MSDP peer.
Master LC slot	Indicates whether the master LC slot has been selected.
Forwarding LC node	Autonomous system to which the peer belongs.
Associated MDT group	Indicates the number of associated MDT groups.

static-rpf

To configure a static Reverse Path Forwarding (RPF) rule for a specified prefix mask, use the **static-rpf** command in an appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

static-rpf *prefix-address prefix-mask type path-id next-hop-address*

no static-rpf

Syntax Description

<i>prefix-address</i>	IP address of a prefix for an address range.
<i>prefix-mask</i>	Prefix mask for an address range. Range is 0 to 32 for IPv4 and 0 to 128 for IPv6.
<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command in EXEC mode to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
<i>next-hop-address</i>	IP address for an RPF neighbor.

Command Default

A static RPF rule for a specified prefix mask is not configured.

Command Modes

Multicast routing configuration
Multicast routing address family ipv4 and ipv6 configuration
Multicast VRF configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.5.0	This command was supported in multicast VRF configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **static-rpf** command is used to configure incompatible topologies for unicast and multicast traffic.

Use the **static-rpf** command to configure a static route to be used for RPF checking in Protocol Independent Multicast (PIM) instead of using the unicast routing table.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example configures the static RPF rule for IP address 10.0.0.1:

```
RP/0/0/CPU0:router(config)# multicast-routing  
RP/0/0/CPU0:router(config-mcast)# vrf green  
RP/0/0/CPU0:router(config-mcast)# static-rpf 10.0.0.1 32 GigE 0/0/5/0 10.1.1.1
```

Related Commands

Command	Description
show pim bsr candidate-rp	Displays PIM candidate rendezvous point information for the BSR.

ttl-threshold (multicast)

To configure the time-to-live (TTL) threshold for packets being forwarded out an interface, use the **ttl-threshold** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

ttl-threshold *tth*

no ttl-threshold *tth*

Syntax Description

<i>tth</i>	Time to live value. Range is 1 to 255.
------------	--

Command Default

tth : 0

Command Modes

Multicast routing interface configuration

Multicast routing VRF interface configuration

Command History

Release	Modification
Release 3.3.0	This command was introduced as a replacement for the multicast ttl-threshold command.
Release 3.5.0	This command was supported in multicast routing VRF interface configuration mode.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Only multicast packets with a TTL value greater than the threshold are forwarded out of the interface. The TTL threshold is compared to the TTL of the packet after it has been decremented by one and before being forwarded.

Configure the TTL threshold only on border routers.



Note

Do not confuse this command with the **ttl-threshold (MSDP)** command in router MSDP configuration mode that is used to confine the multicast data packet TTL to be sent by an Multicast Source Discovery Protocol (MSDP) Source-Active (SA) message.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the TTL threshold to 23, which means that a multicast packet is dropped and not forwarded out of the GigE 0/1/0/0 interface:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# interface GigE 0/1/0/CPU0
RP/0/0/CPU0:router(config-mcast-default-ipv4-if)# ttl-threshold 23
```

Related Commands

Command	Description
ttl-threshold (MSDP)	Limits which multicast data packets are sent in SA messages to an MSDP peer.

vrf (multicast)

To configure a virtual routing and forwarding (VRF) instance for a VPN table, use the **vrf** command in multicast routing configuration mode. To remove the VRF instance from the configuration file and restore the system to its default condition, use the **no** form of this command.

vrf *vrf-name* [**ipv4** | **ipv6**]

no vrf *vrf-name* [**ipv4** | **ipv6**]

Syntax Description

<i>vrf-name</i>	Name of the VRF instance. The following names cannot be used: all, default, and global.
ipv4	(Optional) Configures IPv4 address prefixes.
ipv6	(Optional) Configures IPv6 address prefixes.

Command Default

No default behavior or values.

Command Modes

Multicast routing configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.7.0	ipv4 and ipv6 submodes were supported.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

A VRF instance is a collection of VPN routing and forwarding tables maintained at the provider edge (PE) router.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure a VRF instance and enter VRF configuration mode:

```
RP/0/0/CPU0:router(config)# multicast-routing
RP/0/0/CPU0:router(config-mcast)# vrf vrf_1
RP/0/0/CPU0:router(config-mcast-vrf_1-ipv4)# mdt ?
```

data Data MDT group configuration
 default MDT default group address
 mtu MDT mtu configuration
 source Interface used to set MDT source address

Related Commands

Command	Description
boundary, page 11	Configures a boundary to keep multicast packets from being forwarded.
accounting per-prefix, page 4	Enables per-prefix counters only in hardware.
interface (multicast), page 23	Configures multicast interface properties.
log-traps, page 29	Enables logging of trap events.
mdt data, page 31	Configures the MDT data group address range.
mdt default, page 33	Configures the default group address of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt mtu, page 35	Configures the maximum transmission unit (MTU) configuration of the multicast VPN (MVPN) multicast distribution tree (MDT).
mdt source, page 37	Configures the interface used to set the multicast VPN (MVPN) data multicast distribution tree (MDT) source address.
multipath, page 43	Enables Protocol Independent Multicast (PIM) to divide the multicast load among several equal-cost paths.
rate-per-route, page 49	Enables individual (source, group [S, G]) rate calculations.
ssm	Defines the Protocol Independent Multicast (PIM)-Source Specific Multicast (SSM) range of IP multicast addresses.
static-rpf, page 121	Configures a static Reverse Path Forwarding (RPF) rule for a specified prefix mask.