

Multicast Source Discovery Protocol Commands

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cache-sa-state

To control cache source-active (SA) state on a router, use the **cache-sa-state** command in MSDP configuration mode. To return to the default behavior, use the **no** form of this command.

cache-sa-state {**list** *access-list-number* | **rp-list** *access-list-name*}
no cache-sa-state {**list** *access-list-number* | **rp-list** *access-list-name*}

Syntax Description

list *access-list-number*	Specifies an IP access list that defines which (S, G) pairs to cache.
rp-list *access-list-name*	Specifies an access list name for the originating rendezvous point (RP).

Command Default

The router creates SA state.

Command Modes

MSDP configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

When a new member joins a group immediately after an SA message arrives, latency may occur and an SA message may be missed. To overcome this problem, you can configure this command and the router will supply SA information (from cache memory) to the new member instead of requiring that the member wait until the next SA message is received.

The **cache-sa-state** command is required in every Multicast Source Discovery Protocol (MSDP) speaker, to cache SA messages received from peers.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the cache state for all sources in 10.0.0.0/16 sending to groups 224.2.0.0/16:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# MSDP
RP/0/RP0/CPU0:router(config-msdp)# cache-sa-state list 100
RP/0/RP0/CPU0:router(config-msdp)# exit
RP/0/RP0/CPU0:router(config)# ipv4
access-list 100 permit 10.0.0.0 0.0.255.255 224.2.0.0 0.0.255.255
```

Note The source and destination fields in the access list matches on the (S,G) fields in the SA messages. We recommend that the first address and mask field in the access list is used for the source and the second field in the access list is used for the group or destination.

Related Commands

Command	Description
show msdp sa-cache, on page 24	Displays the (S, G) state learned from Multicast Source Discovery Protocol (MSDP) peers.

cache-sa holdtime

To configure the cache source-active (SA) state hold-time period on a router, use the **cache-sa-holdtime** command in MSDP configuration mode. To return to the default behavior, use the **no** form of this command.

cache-sa-holdtime *holdtime-number*
no cache-sa-holdtime *holdtime-number*

Syntax Description

holdtime-number	Hold-time period (in seconds). Range is 150 to 3600.

Command Default

holdtime-number : 150 seconds

Command Modes

MSDP configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **cache-sa-holdtime** command is used to increase the cache SA state hold time. Any cache entry that is created usually expires after 150 seconds. For troubleshooting purposes, you may need Multicast Source Discovery Protocol (MSDP) to keep SA cache entries for a longer period.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to set the cache SA state hold-time period to 200 seconds:

```
Router# configure
Router(config)# router msdp

Router(config-msdp)# cache-sa-holdtime 200
```

Related Commands

Command	Description
cache-sa-state	Controls cache source-active (SA) state on a router.

clear msdp peer

To clear the TCP connection of the specified Multicast Source Discovery Protocol (MSDP) peer, use the **clear msdp peer** command in EXEC mode.

clear msdp [**ipv4**] **peer** *peer-address*

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
peer-address	IPv4 address or hostname of the MSDP peer to which the TCP connection is cleared.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **clear msdp peer** command closes the TCP connection to the MSDP peer, resets all the MSDP peer statistics, and clears the input and output queues to and from the MSDP peer.

Task ID

Task ID	Operations
multicast	execute

Examples

The following example shows how to clear the TCP connection of the MSDP peer at address 224.15.9.8:

```
Router# clear msdp peer 224.15.9.8
```

Related Commands

Command	Description
peer (MSDP)	Configures a Multicast Source Discovery Protocol (MSDP) peer.

clear msdp sa-cache

To clear external Multicast Source Discovery Protocol (MSDP) source-active (SA) cache entries, use the **clear msdp sa-cache** command in EXEC mode.

clear msdp [**ipv4**] **sa-cache** [*group-address*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
group-address	(Optional) Multicast group address or name for which external SA entries are cleared from the SA cache.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

Note SA caching is enabled by default on Cisco IOS XR software.

If you do not specify a multicast group by group address or group name with the *group-address* argument, the **clear msdp sa-cache** command clears all external SA cache entries.

Note Local SA cache entries can be cleared using the **clear pim topology** command.

Task ID

Task ID	Operations
multicast	execute

Examples

The following example shows how to clear the external SA entries for the multicast group at address 224.5.6.7 from the cache:

```
Router# clear msdp sa-cache 224.5.6.7
```

Related Commands

Command	Description
show msdp sa-cache	Displays the (S, G) state learned from Multicast Source Discovery Protocol (MSDP) peers.

clear msdp stats

To reset Multicast Source Discovery Protocol (MSDP) peer statistic counters, use the **clear msdp stats** command in EXEC mode.

clear msdp [**ipv4**] **stats** [**peer** *peer-address*] [**allvalues**]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
peer *peer-address*	(Optional) Clears MSDP peer statistic counters for the specified IPv6 MSDP peer address or peer name.
allvalues	(Optional) Clears all statistic counters for all MSDP peers.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **clear msdp stats** command resets MSDP peer statistic counters such as the number of keepalives sent and received and the number of Source Active (SA) entries sent and received.

If you do not specify an MSDP peer with the **peer** keyword and *peer-address* argument, this command clears statistic counters for all MSDP peers.

Task ID

Task ID	Operations
multicast	execute

Examples

The following example shows how to clear all statistics for all peers:

```
Router# clear msdp stats peer 224.0.1.1
```

Related Commands

Command	Description
show msdp statistics peer	Displays Multicast Source Discovery Protocol (MSDP) peer statistic counters.

connect-source

To configure a source address used for a Multicast Source Discovery Protocol (MSDP) connection, use the **connect-source** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

connect-source *type* [*interface-path-id*]
no connect-source *type* [*interface-path-id*]

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	(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.

Command Default

If a source address is not configured for the MSDP connection, the IP address of the interface toward the peer is used as a source address.

Command Modes

MSDP configuration

MSDP peer configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **connect-source** command:

- Specifies the interface type and path ID whose primary address becomes the source IP address for the TCP connection.
- Is recommended for MSDP peers that peer with a router inside the remote domain.
- Can be configured globally for MSDP (and is inheritable by MSDP peers). This global configuration can be overridden if the command is issued again in peer configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure a loopback interface source address for an MSDP connection:

```
Router#configure
Router(config)# interface loopback 0
Router(config-if)# ipv4 address 10.1.1.1/24
Router(config-if)# exit
Router(config)# router msdp
Router(config-msdp)# connect-source loopback 0
```

default-peer

To define a default peer from which to accept all Multicast Source Discovery Protocol (MSDP) source-active (SA) messages, use the **default-peer** command in MSDP configuration mode. To return to the default behavior, use the **no** form of this command.

default-peer *ip-address*
no default-peer

Syntax Description

ip-address	IP address or Domain Name System (DNS) name of the MSDP default peer.

Command Default

No default MSDP peer exists.

Command Modes

MSDP configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

A default peer configuration accepts all MSDP Source-Active (SA) messages, as a last Reverse Path Forwarding (RPF) rule, when all other MSDP RPF rules fail.

Use the **default-peer** command if you do not want to configure your MSDP peer to be a BGP peer also.

When the **prefix-list** *list* keyword and argument are not specified, all SA messages received from the configured default peer are accepted.

Remember to configure a BGP prefix list to configure the **prefix-list** *list* keyword and argument with the **default-peer** command.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the router 172.16.12.0 as the default peer to the local router:

```
(config)# router msdp
(config-msdp)# default-peer 172.16.12.0
```

Related Commands

Command	Description
peer (MSDP)	Configures a Multicast Source Discovery Protocol (MSDP) peer.

description (peer)

To add descriptive text to the configuration for a Multicast Source Discovery Protocol (MSDP) peer, use the **description** command in peer configuration mode. To return to the default behavior, use the **no** form of this command.

description *peer-address text*
no description *peer-address text*

Syntax Description

peer-address	IP address or hostname for the peer to which this description applies.
text	Description of the MSDP peer. Use up to 80 characters to describe this peer.

Command Default

No description is associated with an MSDP peer.

Command Modes

MSDP peer configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

Configure a description to make the MSDP peer easier to identify. This description is visible in the **show msdp peer** command output.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the router at the IP address 10.0.5.4 with a description indicating that it is a router at customer site A:

```
Router(config)# router msdp
Router(config-msdp)# peer 10.0.5.4
Router(config-msdp-peer)# description 10.0.5.4 router_at_customer_site_A
```

Related Commands

Command	Description
peer (MSDP)	Configures a Multicast Source Discovery Protocol (MSDP) peer.
show msdp peer	Displays information about the Multicast Source Discovery Protocol (MSDP) peer.

maximum external-sa

To configure the maximum number of external Multicast Source Discovery Protocol (MSDP) source-active (SA) entries that can be learned by the router or by a specific MSDP peer, use the **maximum external-sa** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

maximum external-sa *entries*
no maximum external-sa

Syntax Description

entries	Maximum number of SA entries that can be learned by the router or a specific MSDP peer. Range is 1 to 75000.

Command Default

entries : 20000

Command Modes

MSDP peer configuration

MSDP configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

When issued from MSDP configuration mode, the **maximum external-sa** command configures the total number of external SA entries (that is, the total cumulative SA state for all peers) that can be learned by the router. This command is used to control router resource utilization under heavy traffic conditions.

Note The configuration fails if you configure the maximum number of external SA entries to be lower than the current accumulated SA state.

When issued from MSDP peer configuration mode, the **maximum external-sa** command configures the total number of external SA entries that can be learned by a specific MSDP peer. From MSDP configuration mode, this command can also be used to configure a specific MSPD peer to override the maximum external SA entry value configured with the **maximum peer-external-sa** command.

Note The configuration fails if you configure the maximum number of external SA entries for a specific MSDP peer to be higher than the maximum number of external SA entries that can be learned by the router.

Task ID

Task ID	Operations
multicast	read, write

Examples

This example shows how to configure the maximum number of external SA entries that can be learned by the router to 30000 SA entries:

```
Router(config)# router msdp
Router(config-msdp)# maximum external-sa 30000
```

This example shows how to configure the maximum number of external SA entries that can be learned by the MSDP peer at address 10.1.5.3 to 25000 SA entries:

```
Router(config)# router msdp
Router(config-msdp)# peer 10.1.5.3
Router(config-msdp-peer)# maximum external-sa 25000
```

Related Commands

Command	Description
maximum external-sa	Configures the maximum number of external Multicast Source Discovery Protocol (MSDP) source-active (SA) entries that can be learned by the router or by a specific MSDP peer.
show msdp summary	Displays Multicast Source Discovery Protocol (MSDP) peer status.

maximum peer-external-sa

To configure the maximum number of external Multicast Source Discovery Protocol (MSDP) Source-Active (SA) entries that can be learned from MSDP peers, use the **maximum peer-external-sa** command in MSDP configuration mode. To return to the default behavior, use the **no** form of this command.

maximum peer-external-sa *entries*
no maximum peer-external-sa

Syntax Description

entries	Maximum number of SA entries to be learned by MSDP peers. Range is 1 to 75000.

Command Default

entries : 20000

Command Modes

MSDP configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **maximum peer-external-sa** command configures the maximum number of external SA entries that can be learned for each configured MSDP peer, whereas the **maximum external-sa** command (in MSDP configuration mode) configures the maximum number of SA entries accepted by the router as a cumulative total.

Note The configuration fails if you attempt to configure the maximum number of external SA entries for MSDP peers to be higher than the maximum number of external SA entries that can be learned by the router.

Task ID

Task ID	Operations
multicast	read, write

Examples

This example shows how to configure the maximum number of external SA entries that each MSDP peer can learn to 27000 SA entries:

```
Router(config)# router msdp
Router(config-msdp)# maximum peer-external-sa 27000
```

Related Commands

Command	Description
maximum external-sa	Configures the maximum number of external Multicast Source Discovery Protocol (MSDP) source-active (SA) entries that can be learned by the router or by a specific MSDP peer.

Command	Description
show msdp summary	Displays Multicast Source Discovery Protocol (MSDP) peer status.

mesh-group (peer)

To configure a Multicast Source Discovery Protocol (MSDP) peer to be a member of a mesh group, use the **mesh-group** command in peer configuration mode. To return to the default behavior, use the **no** form of this command.

mesh-group *name*
no mesh-group *name*

Syntax Description

name	Name of the mesh group.

Command Default

MSDP peers do not belong to a mesh group.

Command Modes

MSDP peer configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

A *mesh group* is a group of MSDP speakers that have fully meshed MSDP connectivity among themselves. Any Source-Active (SA) messages received from a peer in a mesh group are not forwarded to other peers in the same mesh group.

Mesh groups can be used to:

- Reduce SA message flooding
- Simplify peer Reverse Path Forwarding (RPF) flooding (no need to run Border Gateway Protocol [BGP] among MSDP peers)

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the MSDP peer at address 10.0.5.4 to be a member of the mesh group named internal:

```
Router# configure
Router(config)# router msdp
Router(config-msdp)# peer 10.0.5.4
Router(config-msdp-peer)# mesh-group internal
```

global maximum external-sa

To limit the total number of source active (SA) messages across all VRFs, use the **global maximum external-sa** command in the MSDP configuration mode. To remove the set SA messages limit use the **no** form of the command.

global maximum external-sa *value*
no global maximum external-sa

Syntax Description

value	Specifies the maximum-limit for the source active messages. Range is 1 to 75000.

Command Default

None

Command Modes

MSDP configuration mode

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The value configured using the **global maximum external-sa** command must be greater than the maximum value of any VRF, which, in turn, must be greater than the maximum value of any peer in that VRF. When the set limit is reached, a syslog message is issued.

Task ID

Task ID	Operation
multicast	read, write

This example shows the maximum-limit value for the source active messages, set to 100:

```
Router# configure
Router(config)# router msdp
Router(config-msdp) # global maximum external-sa 100
```

originator-id

To identify an interface type and instance to be used as the rendezvous point (RP) address in a Multicast Source Discovery Protocol (MSDP) Source-Active (SA) message, use the **originator-id** command in MSDP configuration mode. To return to the default behavior, use the **no** form of this command.

originator-id *type interface-path-id*
no originator-id *type interface-path-id*

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.

interface-path-id	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

The RP address is used as the originator ID.

Command Modes

MSDP configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **originator-id** command allows an MSDP speaker that originates an SA message to use the IP address of the interface as the RP address in the SA message.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure HundredGigE0/0/0/24 to be used as the RP address in SA messages:

```
Route(config)# router msdp
Router(config-msdp)# originator-id HundredGigE0/0/0/24
```

password (peer)

To enable Message Digest 5 (MD5) authentication on a TCP connection between two Multicast Source Discovery Protocol (MSDP) peers, use the **password** command in MSDP peer configuration mode. To return to the default behavior, use the **no** form of this command.

password {**clear** | **encrypted**} *password*
no password {**clear** | **encrypted**} *password*

Syntax Description

clear	Specifies that an unencrypted password follows. The password must be a case-sensitive, clear-text unencrypted password.
encrypted	Specifies that an encrypted password follows. The password must be a case-sensitive, encrypted password.

password	Password of up to 80 characters. The password can contain any alphanumeric characters. However, if the first character is a number or the password contains a space, the password must be enclosed in double quotation marks; for example, “2 password.”

Command Default

No password is configured.

Command Modes

MSDP peer configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

The **password** command supports MD5 signature protection on a TCP connection between two MSDP peers. When MD5 authentication is enabled between two MSDP peers, each segment sent on the TCP connection between the peers is verified. MD5 authentication must be configured with the same password on both MSDP peers; otherwise, the connection between them is not made. Configuring MD5 authentication causes the Cisco IOS XR software to generate and verify the MD5 digest of every segment sent on the TCP connection.

Use the **show msdp peer** command to check if a password has been configured on a peer.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure the MSDP password on a peer:

```
Router# configure
Router(config)# router msdp
Router(config-msdp)# peer 10.0.5.4
Router(config-msdp-peer)# password encrypted a34bi5m
```

Related Commands

Command	Description
show msdp peer	Displays information about the Multicast Source Discovery Protocol (MSDP) peer.

peer (MSDP)

To configure a Multicast Source Discovery Protocol (MSDP) peer, use the **peer** command in MSDP configuration mode. To return to the default behavior, use the **no** form of this command.

peer *peer-address*
no peer *peer-address*

Syntax Description

peer-address	IP address or Domain Name System (DNS) name of the router that is to be the MSDP peer.

Command Default No MSDP peer is configured.

Command Modes MSDP configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines Configure the specified router as a Border Gateway Protocol (BGP) neighbor.

If you are also BGP peering with this MSDP peer, use the same IP address for MSDP as you do for BGP. However, you are not required to run BGP with the MSDP peer, as long as there is a BGP path between the MSDP peers. If there is no path, you must configure the **default-peer** command from MSDP configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples The following example shows how to configure the router at the IP address 172.16.1.2 as an MSDP peer to the local router and enter MSDP peer configuration mode:

```
Router# configure
Router(config)# router msdp
Router(config-msdp)# peer 172.16.1.2
Router(config-msdp-peer)#
```

Related Commands

Command	Description
default-peer	Defines a default peer from which to accept all Multicast Source Discovery Protocol (MSDP) source-active (SA) messages.

remote-as (multicast)

To configure the remote autonomous system number of this peer, use the **remote-as** command in peer configuration mode. To return to the default behavior, use the **no** form of this command.

remote-as *as-number*
no remote-as *as-number*

Syntax Description

as-number	Autonomous system number of this peer. Range for 2-byte numbers is 1 to 65535. Range for 4-byte numbers is 1.0 to 65535.65535.

Command Default If this command is not issued during peer configuration, the remote autonomous system value is derived from BGP (if also configured) or initialized to zero, when only Interior Gateway Protocol (IGP) is present.

Command Modes MSDP peer configuration

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines Use the **remote-as** command to configure remote autonomous system if deriving the autonomous system value from the configured Border Gateway Protocol (BGP) is not required.

Task ID

Task ID	Operations
multicast	read, write

Examples The following example shows how to set the autonomous system number for the specified peer to 250:

```
Router(config)# router msdp
Router(config-msdp)# peer 172.16.5.4
Router(config-msdp-peer)# remote-as 250
```

sa-filter

To configure an incoming or outgoing filter list for Source-Active (SA) messages received from the specified Multicast Source Discovery Protocol (MSDP) peer, use the **sa-filter** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

sa-filter {**in** | **out**} {**list** *access-list-name* | **rp-list** *access-list-name*}
no sa-filter {**in** | **out**} {**list** *access-list-name* | **rp-list** *access-list-name*}

Syntax Description

in | **out**	Specifies incoming or outgoing SA filtering.
list *access-list-name*	Specifies an IP access list number or name. If no access list is specified, no (S, G) pairs from the peer are filtered.
rp-list *access-list-name*	Specifies an originating rendezvous point (RP) access list in SA messages.

Command Default If the **sa-filter** command is not configured, no incoming or outgoing messages are filtered; all incoming SA messages are accepted from the peer, and all outgoing SA messages received are forwarded to the peer.

Command Modes MSDP configuration

MSDP peer configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

Note You can configure the **sa-filter** command globally for MSDP (and is inheritable by MSDP peers); however, this global configuration can be overridden if it is issued again in peer configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

In the following example, only (S, G) pairs that pass access list 10 are forwarded in an SA message to the peer with IP address 131.107.5.4:

```
RP/0/RP0/CPU0:router(config)# router msdp
RP/0/RP0/CPU0:router(config-msdp)# peer 131.107.5.4
RP/0/RP0/CPU0:router(config-msdp-peer)# sa-filter out list_10
```

In the following example, only (S, G) pairs for the rendezvous point that passes access list 151 are forwarded in an SA message to the peer with the IP address 131.107.5.4:

```
RP/0/RP0/CPU0:router(config)# router msdp
RP/0/RP0/CPU0:router(config-msdp)# peer 131.107.5.4
RP/0/RP0/CPU0:router(config-msdp-peer)# sa-filter out rp-list list_151
```

Note The source and destination fields in the access list matches on the (S,G) fields in the SA messages. We recommend that the first address and mask field in the access list is used for the source and the second field in the access list is used for the group or destination.

Related Commands

Command	Description
peer (MSDP), on page 15	Configures a Multicast Source Discovery Protocol (MSDP) peer.

show msdp globals

To display the Multicast Source Discovery Protocol (MSDP) global variables, use the **show msdp globals** command in EXEC mode.

show msdp [ipv4] globals

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

XR EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

Some global variables associated with MSDP sessions are displayed, such as the originator ID, default peer, and connection state with Protocol Independent Multicast (PIM), Source.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show msdp globals** command:

```
RP/0/RP0/CPU0:router# show msdp globals

Multicast Source Discovery Protocol - msdp[405672]
  AS: 10, caching, originator: not set, default peer: not set
  Connected to PIM: yes
  Active RP              Grange/len     Source Count
                            ADV/RPF     (Total, Active)
  10.10.2.1             224.0.0.0/4      0,0
  10.10.10.3                0.0.0.0      1,1

  Max/active group count:     1/1
  Max/active SA count:     1/1

  General stats
  Current lists alloced/free:           2/0
  Total list items alloced/free:        9/1
  Total source buffers alloced/free:    1/0
  Total group buffers alloced/free:     1/0
  Total RP buffers alloced/free:        2/0
  TLV buffers alloced/free:             1/1
```

This table describes the significant fields shown in the display.

Table 1: show msdp globals Field Descriptions

Field	Description
AS	Local autonomous system.
caching	SA caching that is enabled.
originator	Local rendezvous point (RP).
default peer	Default peer to accept Source Active (SA) messages from when all Reverse Path Forwarding (RPF) rules fail.
Active RP	All RPs involved in sending SA messages to this router.

Field	Description
Grange/len	Multicast Group Range or Multicast Group Mask. The field is visible only when there is a specified group range for the local RP. If a group range is unspecified (for example, for RPs that advertise SAs) only the Advertiser address and the RPF information is displayed (see ADV/RPF below).
Source Count	Total and active SA messages advertised by the respective RP.
ADV/RPF	Advertiser and RPF entry.
Max/active group count	Maximum group count since router was booted and number of active groups.
Max/active SA count	Maximum SA message count since router was booted, and number of active SA messages.
Total source buffers alloced/free	Number of internal source buffers allocated and freed after allocation.
Total group buffers alloced/free	Number of internal group buffers allocated and freed after allocation.
Total RP buffers alloced/free	Number of internal RP buffers allocated and freed after allocation.
TLV buffers alloced/free	Number of internal time-to-live buffers allocated and freed after allocation.

Related Commands

Command	Description
show msdp peer, on page 21	Displays information about the Multicast Source Discovery Protocol (MSDP) peer.
show msdp sa-cache, on page 24	Displays the (S, G) state learned from Multicast Source Discovery Protocol (MSDP) peers.

show msdp nsr

To display nonstop routing (NSR) information in the Multicast Source Discovery Protocol (MSDP), use the **show mrib nsr** command in the appropriate mode.

show msdp ipv4| ipv6 nsr

Syntax Description

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

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

XR EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show msdp nsr** command:

```
RP/0/RP0/CPU0:router# show msdp nsr
```

Related Commands

Command	Description
show mrib nsr	Displays the state of NSR operation in the MRIB.
show igmp nsr	Displays the state of NSR operation for IGMP.
show pim nsr	Displays the state of NSR operation for PIM.

show msdp peer

To display information about the Multicast Source Discovery Protocol (MSDP) peer, use the **show msdp peer** command in EXEC mode.

show msdp [**ipv4**] **peer** [*peer-address*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
peer-address	(Optional) IP address or hostname of the MSDP peer for which information is displayed.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show msdp peer** command:

```
RP/0/RP0/CPU0:router# show msdp peer 10.10.10.2

MSDP Peer 10.10.10.2 (?), AS 20
Description:
 Connection status:
  State: Up, Resets: 0, Connection Source: 10.10.10.12
  Uptime(Downtime): 00:00:26, SA messages received: 0
  TLV messages sent/received: 1/1
 Output messages discarded: 0
  Connection and counters cleared 00:00:26 ago
 SA Filtering:
  Input (S,G) filter: none
  Input RP filter: none
  Output (S,G) filter: none
  Output RP filter: none
 SA-Requests:
  Input filter: none
  Sending SA-Requests to peer: disabled
 Password: None
 Peer ttl threshold: 0
 Input queue size: 0, Output queue size: 0
```

This table describes the significant fields shown in the display.

Table 2: show msdp peer Field Descriptions

Field	Description
MSDP Peer	IP address of the MSDP peer.
AS	Autonomous system to which the peer belongs.
State	State of the peer.
Uptime(Downtime)	Days and hours the peer is up or down, per state shown in previous column. If less than 24 hours, it is shown in terms of hours:minutes:seconds.
Msgs Sent/Received	Number of Source-Active (SA) messages sent to peer/number of SA messages received from peer.
Peer Name	Name of peer.
TCP connection source	Interface used to obtain IP address for TCP local connection address.
SA input filter	Name of the access list filtering SA input (if any).
SA output filter	Name of the access list filtering SA output (if any).
SA-Request filter	Name of the access list filtering SA request messages (if any).

Field	Description
Sending SA-Requests to peer	There are no peers configured to send SA request messages to.
Password	Information on the password. If the password is set on an active peer, "Configured, set on active socket" is displayed.
Peer ttl threshold	Multicast packets with an IP header that shows time-to-live greater than or equal to this value are sent to the MSDP peer.

Related Commands

Command	Description
peer (MSDP), on page 15	Configures a Multicast Source Discovery Protocol (MSDP) peer.
show msdp sa-cache, on page 24	Displays the (S, G) state learned from Multicast Source Discovery Protocol (MSDP) peers.

show msdp rpf

To display the Multicast Source Discovery Protocol (MSDP) Reverse Path Forwarding (RPF) rule that governs whether an Source-Active (SA) from an originating RP will be accepted, use the **show msdp rpf** command in EXEC mode.

show msdp [**ipv4**] **rpf** *rpf-address*

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
rpf-address	IP address or hostname of the RPF next hop.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show msdp rpf** command displays the peer interface and autonomous system to which the SAs are sent and forwarded based on the MSDP RPF rule. The rule is displayed and applied on the RP address field of the arriving SAs.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show msdp rpf** command for RP peer 10.1.1.1:

```
RP/0/RP0/CPU0:router# show msdp rpf 10.1.1.1

RP peer for 172.16.1.1 is 10.1.1.1 AS 200, rule: 1
bgp/rib lookup: nexthop: 10.1.1.1, asnum: 200
```

This table describes the significant fields shown in the display.

Table 3: show msdp rpf Field Descriptions

Field	Description
RP peer for 172.16.1.1 is 10.1.1.1	IP address of the MSDP RPF peer.
AS 200	Autonomous system to which the peer belongs.
rule: 1	MSDP RPF rule that matches what was learned from SAs.
bgp/rib lookup:	Multicast RPF routing table lookup.
nexthop: 10.1.1.1	Router where the SA is sent to reach the final destination.
asnum: 200	Autonomous system number for the next-hop neighbor router.

show msdp sa-cache

To display the (S, G) state learned from Multicast Source Discovery Protocol (MSDP) peers, use the **show msdp sa-cache** command in EXEC mode.

show msdp [**ipv4**] **sa-cache** [*source-address*] [*group-address*] [**all**] [**asnum** *as-number*] [**peer** *peer-address*] [**rpaddr** *rp-address*] [**summary**]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
source-address	(Optional) Source address or hostname of the source about which (S, G) information is displayed.
group-address	(Optional) Group address or name of the group about which (S, G) information is displayed.
all	(Optional) Displays all Source Active (SA) entries with PI (PIM Interested) flags.
asnum *as-number*	(Optional) Displays SA entries of the specified autonomous system number. Range for 2-byte Autonomous system numbers (ASNs) is 1 to 65535. Range for 4-byte Autonomous system numbers (ASNs) in asplain format is 1 to 4294967295. Range for 4-byte Autonomous system numbers (ASNs) is asdot format is 1.0 to 65535.65535.
peer *peer-address*	(Optional) Displays peer entry information, including peer name and peer address.
rpaddr *rp-address*	(Optional) Displays SA entries that match the specified rendezvous point (RP) address.
summary	(Optional) Displays the count of all SA entries, RPs, sources, and groups.

Command Default IPv4 addressing is the default.

Command Modes EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines The **show msdp sa-cache** command is used to examine the (S, G) entries and the attributes, flags (L, E, EA), uptime, autonomous system number, and RP addresses that are stored in the SA cache.

These guidelines apply when this command is used:

- The **cache-sa-state** command is enabled by default.
- When you specify the **summary** keyword, the total number of cache, group, and source entries, and entries advertised by each RP and autonomous system are displayed.
- When you specify two addresses or names, an (S, G) entry corresponding to those addresses is displayed.
- When you specify a single group address, all sources for that group are displayed.
- When you specify no options, the entire SA cache is displayed, excluding the PI flag entries.

Task ID

Task ID	Operations
multicast	read

Examples This is a sample output from the **show msdp sa-cache** command:

```
RP/0/RP0/CPU0:router# show msdp sa-cache

MSDP Flags:
E - set MRIB E flag, L - domain local source is active,
EA - externally active source, PI - PIM is interested in the group,
DE - SAs have been denied.
Cache Entry:
(10.10.5.102, 239.1.1.1), RP 10.10.4.3, AS 20, 15:44:03/00:01:17
Learned from peer 10.10.2.2, RPF peer 10.10.2.2
SA's recvd 1049, Encapsulated data received: 0
grp flags: PI, src flags: E, EA, PI
```

This table describes the significant fields shown in the display.

Table 4: show msdp sa-cache Field Descriptions

Field	Description
(10.10.5.102, 239.1.1.1)	The first address (source) is sending to the second address (group).
RP 10.10.4.3	Rendezvous point (RP) address in the originating domain where the SA messages started.

Field	Description
MBGP/AS 20	RP is in autonomous system AS 20 according to the unicast RPF table: • If Multiprotocol Border Gateway Protocol (MBGP) is not configured—RIB table 1. • If MBGP is configured—RIB table 2 or multicast table.
15:44:03/00:01:17	The route has been cached for 15 hours, 44 minutes, and 3 seconds. If no SA message is received in 1 minute and 17 seconds, the route is removed from the SA cache.
Encapsulated data received: 0	MSDP SA captures any data information when the source starts so that the receiver does not miss data when the SA path is established.

The following is sample output using the **all** keyword option:

```
RP/0/RP0/CPU0:router# show msdp sa-cache all

MSDP Flags:
E - set MRIB E flag , L - domain local source is active,
EA - externally active source, PI - PIM is interested in the group,
DE - SAs have been denied.  Timers age/expiration,
Cache Entry:

(*, 239.1.1.1), RP 0.0.0.0, AS 0, 06:32:18/expired
Learned from peer local, RPF peer local
SAs recvd 0, Encapsulated data received: 0 grp flags: PI,  src flags:
```

This table describes the significant fields shown in the display.

Table 5: show msdp sa-cache all Field Descriptions

Field	Description
(*, 239.1.1.1)	Protocol Independent Multicast (PIM) interest in the group due to a local Internet Group Management Protocol (IGMP) join.
RP 0.0.0.0	There is no RP associated with this entry.
AS 0	This entry is 0, autonomous system (AS) rendezvous point (RP) is null.
06:32:18/expired	Route is alive in hours, minutes, and seconds. Note that MSDP does not monitor this route as it is received from the MRIB and PIM.

The following is sample output using the **summary** keyword option:

```
RP/0/RP0/CPU0:router# show msdp sa-cache summary

Total # of SAs = 3
Total # of RPs = 2
Total # of Sources = 1
Total # of Groups = 3

Originator-RP   SA total   RPF peer
```

```
172.16.1.1          0           0.0.0.0
172.17.1.1          3           172.17.1.1

AS-num   SA total

200      3
```

This table describes the significant fields shown in the display.

Table 6: show msdp sa-cache summary Field Descriptions

Field	Description
Total # of SAs	Total number of SAs that are currently active in the system.
Total # of RPs	Total number of RPs that have distributed the SA information to this system.
Total # of Sources	Total number of sources that are active from all domains.
Total # of Groups	Total number of groups to which sources are sending data from all domains.
Originator-RP	SA information based on the individual RPs and the originating domains that distributed them.
AS-num	SA information based on the originating autonomous system.

The following is sample output using the **asnum** keyword option:

```
RP/0/RP0/CPU0:router# show msdp sa-cache asnum 200

MSDP Flags:
E - set MRIB E flag , L - domain local source is active,
EA - externally active source, PI - PIM is interested in the group,
DE - SAs have been denied.  Timers age/expiration,
Cache Entry:

(172.31.1.1, 239.1.1.1), RP 5.1.1.1, AS 200, 00:00:25/00:02:04
  Learned from peer 5.1.1.1, RPF peer 172.17.1.1
  SAs recvd 1, Encapsulated data received: 100
    grp flags: none,  src flags: EA
(172.31.1.1, 239.1.1.2), RP 172.17.1.1, AS 200, 00:00:16/00:02:13
  Learned from peer 172.17.1.1, RPF peer 172.17.1.1
  SAs recvd 1, Encapsulated data received: 100
    grp flags: none,  src flags: EA
(172.31.1.1, 239.1.1.3), RP 172.17.1.1, AS 200, 00:00:13/00:02:16
  Learned from peer 172.17.1.1, RPF peer 172.17.1.1
  SAs recvd 1, Encapsulated data received: 100
    grp flags: none,  src flags: EA
```

Related Commands

Command	Description
cache-sa-state, on page 1	Controls cache source-active (SA) state on a router.
peer (MSDP), on page 15	Configures a Multicast Source Discovery Protocol (MSDP) peer.

show msdp statistics peer

To display Multicast Source Discovery Protocol (MSDP) peer statistic counters, use the **show msdp statistics peer** command in EXEC mode

XR EXEC

.

show msdp [**ipv4**] **statistics peer** [*peer-address*]

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.
peer-address	(Optional) IP address or name of the MSDP peer.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

XR EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show msdp statistics peer** command displays MSDP peer statistics such as the number of keepalive messages sent and received and the number of Source-Active (SA) entries sent and received.

If you do not specify an MSDP peer with the *peer-address* argument, this command displays statistics for all MSDP peers.

Task ID

Task ID	Operations
multicast	read

Examples

The following is sample output from the **show msdp statistics peer** command:

```
RP/0/RP0/CPU0:router# show msdp statistics peer

MSDP Peer Statistics :-

Peer 10.1.2.3 : AS is 10, State is Up, 0 active SAs
    TLV Rcvd : 57 total
               57 keepalives, 0 notifications
               0 SAs, 0 SA Requests
               0 SA responses, 0 unknowns
    TLV Sent : 57 total
               54 keepalives, 0 notifications
               3 SAs, 0 SA Requests
               0 SA responses
    SA msgs  : 0 received, 3 sent
```

```
Peer 10.2.3.4 : AS is 0, State is Connect, 0 active SAs
    TLV Rcvd : 0 total
               0 keepalives, 0 notifications
               0 SAs, 0 SA Requests
               0 SA responses, 0 unknowns
    TLV Sent : 0 total
               0 keepalives, 0 notifications
               0 SAs, 0 SA Requests
               0 SA responses
    SA msgs  : 0 received, 0 sent
```

This table describes the significant fields shown in the display.

Table 7: show msdp statistic peer Field Descriptions

Field	Description
Peer 10.1.2.3	All statistics are displayed for MSDP peer.
AS 10	Peer belongs to autonomous system (AS) 10.
State is UP	Peer state is established.
0 active SAs	There are no active SAs from this peer.
TLV Rcvd	Information about the time-to-lives (TLVs) received from this peer.
TLV Sent	Information about the TLVS sent to this peer.
SA msgs	Information about the SA messages for this peer.

Related Commands

Command	Description
clear msdp stats, on page 5	Resets Multicast Source Discovery Protocol (MSDP) peer statistic counters.

show msdp summary

To display Multicast Source Discovery Protocol (MSDP) peer status, use the **show msdp summary** command in EXEC mode.

show msdp [**ipv4**] **summary**

Syntax Description

ipv4	(Optional) Specifies IPv4 address prefixes.

Command Default

IPv4 addressing is the default.

Command Modes

EXEC

XR EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show msdp summary** command displays peer status such as the following:

- Peer address
- Peer autonomous system
- Peer state
- Uptime and downtime
- Number of Source-Active (SA) messages sent or received

Task ID

Task ID	Operations
multicast	read

Examples

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

```
RP/0/RP0/CPU0:router# show msdp summary

Out of Resource Handling Enabled
Maximum External SA's Global : 20000
Current External Active SAs : 0

MSDP Peer Status Summary
Peer Address       AS    State     Uptime/   Reset  Peer    Active Cfg.Max    TLV
                                   Downtime  Count  Name    SA Cnt Ext.SAs   recv/sent
10.1.1.1           0     NoIntf    00:10:07  0      ?       0      0            0/0
```

This table describes the significant fields shown in the display.

Table 8: show msdp summary Field Descriptions

Field	Description
Peer Address	Neighbor router address from which this router has MSDP peering established.
AS	Autonomous system to which this peer belongs.
State	State of peering, such as UP, inactive, connect, and NoIntf.
Uptime/Downtime	MSDP peering uptime and downtime in hours, minutes, and seconds.
Reset Count	Number of times the MSDP peer has reset.
Peer Name	DNS name of peer (if available).
Active SA Cnt	Total number of SAs that are active on this router.
Cfg. Max Ext. SAs	Total number of maximum external SAs after the SAs are dropped. If 0, nothing is configured.

Field	Description
TLV recv/sent	Total number of time-to-lives (TLVs) sent and received.

Related Commands

Command	Description
show msdp peer, on page 21	Displays information about the Multicast Source Discovery Protocol (MSDP) peer.
show msdp sa-cache, on page 24	Displays the (S, G) state learned from Multicast Source Discovery Protocol (MSDP) peers.

shutdown (MSDP)

To shut down a Multicast Source Discovery Protocol (MSDP) peer, use the **shutdown** command in peer configuration mode. To return to the default behavior, use the **no** form of this command.

shutdown
no shutdown

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

MSDP peer configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

Use the **shutdown** command to shut down the peer. To configure many MSDP commands for the same peer, shut down the peer, configure it, and activate the peer later.

You might also want to shut down an MSDP session without losing configuration information for the peer.

When a peer is shut down, the TCP connection is terminated and is not restarted.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to shut down the peer with the address 172.16.5.4:

```
RP/0/RP0/CPU0:router(config)# router msdp
```

```
RP/0/RP0/CPU0:router(config-msdp)# peer 172.16.5.4
RP/0/RP0/CPU0:router(config-msdp-peer)# shutdown
```

Related Commands

Command	Description
show msdp peer, on page 21	Displays information about the Multicast Source Discovery Protocol (MSDP) peer.

show msdp vrf context

To show the MSDP information configured for a VPN routing and forwarding (VRF) context, use the **show msdp vrf context** command in EXEC mode.

show msdp vrf *vrf-name* **context**

Syntax Description

vrf-name	VPN routing and forwarding (VRF) interface.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 6.0.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
multicast	read

Example

This example shows how to use the **show msdp vrf context** command:

```
Router# show msdp vrf red context
Fri Feb  8 18:13:51.599 PST

MSDP context information for red
  VRF ID                     : 0x60000002
  Table ID                   : 0xe0000002
  Table Count (Active/Total) : 1/1
Inheritable Configuration
  TTL                  : 2
  Maximum SAs          : 0
  Keepalive Period     : 30
  Peer Timeout Period : 75
  Connect Source       :
  SA Filter In         :
  SA Filter Out        :
```

```
  RP Filter In        :
  RP Filter Out       :
Configuration
  Originator Address         : 0.0.0.0
  Originator Interface Name  :
  Default Peer Address       : 0.0.0.0
  SA Holdtime                : 150
  Allow Encaps Count         : 0
  Context Maximum SAs        : 20000
SA Cache Counts    (Current/High Water Mark)
  Groups       :          0/0
  Sources      :          0/0
  RPs          :          2/0
  External SAs :          0/0
MRIB Update Counts
  Total updates        : 2
  With no changes      : 0
  (*,G) routes         : 2
  (S,G) routes         : 0
MRIB Update Drops
  Invalid group        : 0
  Invalid group length : 0
  Invalid source       : 0
  Auto-RP Address      : 2
```

ttl-threshold (MSDP)

To limit which multicast data packets are sent in Source-Active (SA) messages to a Multicast Source Discovery Protocol (MSDP) peer, use the **ttl-threshold** command in MSDP configuration mode or peer configuration mode. To return to the default behavior, use the **no** form of this command.

ttl-threshold *ttl*
no ttl-threshold *ttl*

Syntax Description

ttl	Time to live value. Range is 1 to 255.

Command Default

ttl : 1

Command Modes

MSDP configuration

MSDP peer configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **ttl-threshold** command limits which multicast data packets are sent in data-encapsulated Source-Active (SA) messages. Only multicast packets with an IP header time-to-live (TTL) greater than or equal to the *ttl* argument are sent to the MSDP peer specified by the IP address or name.

Use the **ttl-threshold** command to use TTL to examine your multicast data traffic. For example, you can limit internal traffic to a TTL of 8. If you want other groups to go to external locations, send the packets with a TTL greater than 8.

Note This command can be configured globally for MSDP (and to be inheritable by MSDP peers). However this global configuration can be overridden if issued again in peer configuration mode.

Task ID

Task ID	Operations
multicast	read, write

Examples

The following example shows how to configure a TTL threshold of eight hops:

```
RP/0/RP0/CPU0:router(config)# router msdp
RP/0/RP0/CPU0:router(config-msdp)# ttl-threshold 8
```

Related Commands

Command	Description
peer (MSDP), on page 15	Configures a Multicast Source Discovery Protocol (MSDP) peer.