



Multicast Source Discovery Protocol Commands

Use the commands in this chapter to configure and monitor Multicast Source Discovery Protocol (MSDP). For configuration information and examples of MSDP, refer to the “Configuring Multicast Source Discovery Protocol” chapter of the *Cisco IOS IP and IP Routing Configuration Guide*.

clear ip msdp peer

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

```
clear ip msdp peer {ip-address | name}
```

| | | |
|---------------------------|---------------------------------|---|
| Syntax Description | <i>ip-address</i> <i>name</i> | IP address or name of the MSDP peer to which the TCP connection is cleared. |
|---------------------------|---------------------------------|---|

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| Command Modes | EXEC |
|----------------------|------|

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|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | 12.0(7)T | This command was introduced. |

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|-------------------------|--|
| Usage Guidelines | This command closes the TCP connection to the peer, resets all the MSDP peer statistics, and clears the input and output queues to and from the MSDP peer. |
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| Examples | The following example clears the TCP connection to the MSDP peer at 120.15.9.8: <pre>clear ip msdp peer 120.15.9.8</pre> |
|-----------------|---|

| | | |
|-------------------------|---------------------|--------------------------|
| Related Commands | Command | Description |
| | ip msdp peer | Configures an MSDP peer. |

clear ip msdp sa-cache

To clear Multicast Source Discovery Protocol (MSDP) Source-Active cache entries, use the **clear ip msdp sa-cache** EXEC command.

```
clear ip msdp sa-cache [group-address | name]
```

| | | |
|---------------------------|------------------------------------|--|
| Syntax Description | <i>group-address</i> <i>name</i> | (Optional) Multicast group address or name for which Source-Active entries are cleared from the Source-Active cache. |
|---------------------------|------------------------------------|--|

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| Command Modes | EXEC |
|----------------------|------|

| Command History | Release | Modification |
|------------------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

| | |
|-------------------------|--|
| Usage Guidelines | <p>In order to have any SA entries in the cache to clear, Source-Active caching must have been enabled with the ip msdp cache-sa-state command</p> <p>If no multicast group is identified by group address or name, all SA cache entries are cleared.</p> |
|-------------------------|--|

| | |
|-----------------|---|
| Examples | <p>The following example clears the Source-Active entries for the multicast group 224.5.6.7 from the cache:</p> <pre>clear ip msdp sa-cache 224.5.6.7</pre> |
|-----------------|---|

| Related Commands | Command | Description |
|------------------------------|---|--|
| | ip msdp cache-sa-state | Causes the router to create Source-Active State. |
| show ip msdp sa-cache | Displays (S,G) state learned from MSDP peers. | |

clear ip msdp statistics

To clear statistics counters for one or all of the Multicast Source Discovery Protocol (MSDP) peers without resetting the sessions, use the **clear ip msdp statistics** EXEC command.

clear ip msdp statistics [*peer-address* | *name*]

| | | |
|---------------------------|-----------------------------------|--|
| Syntax Description | <i>peer-address</i> <i>name</i> | (Optional) Address or name of the MSDP peers whose statistics counters, reset count, and input/output count are cleared. |
|---------------------------|-----------------------------------|--|

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|----------------------|------|
| Command Modes | EXEC |
|----------------------|------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | 12.0(7)T | This command was introduced. |

| | |
|-----------------|--|
| Examples | <p>The following example clears the counters for the peer named sanjose:</p> <pre>clear ip msdp statistics sanjose</pre> |
|-----------------|--|

ip msdp border

To configure a router that borders a Protocol Independent Multicast (PIM) sparse mode region and dense-mode region to use Multicast Source Discovery Protocol (MSDP), use the **ip msdp border** global configuration command. To prevent this action, use the **no** form of this command.

ip msdp border sa-address *type number*

no ip msdp border sa-address *type number*

Syntax Description

| | |
|--------------------|--|
| sa-address | Active source IP address. |
| <i>type number</i> | Interface type and number from which the IP address is derived and used as the RP address in Source-Active messages. Thus, MSDP peers can forward Source-Active messages away from this border. The IP address of the interface is used as the Originator-ID, which is the RP field in the MSDP Source-Active message. |

Defaults

The active sources in the dense-mode region will not participate in MSDP.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.0(7)T | This command was introduced. |

Usage Guidelines



Note

This command is not recommended. It is better to configure the border router in the sparse mode domain to proxy-register sources in the dense-mode domain, and have the sparse mode domain use standard MSDP procedures to advertise these sources.

Use this command if you want the router to send Source-Active messages for sources active in the PIM dense-mode region to MSDP peers.



Note

If you use this command, you **MUST** constrain the sources advertised by using the **ip msdp redistribute** command. Configure the **ip msdp redistribute** command to apply to only local sources. Be aware that this can result in (S,G) state remaining long after a source in the dense-mode domain has stopped sending.

Note that the **ip msdp originator-id** command also identifies an interface type and number to be used as the RP address. If both the **ip msdp border** and the **ip msdp originator-id** command are configured, the latter command prevails. That is, the address derived from the **ip msdp originator-id** command determines the address of the RP.

Examples

In the following example, the local router is not an RP. It borders a PIM sparse mode region with a dense-mode region. It uses the IP address of Ethernet interface 0 as the “RP” address in SA messages.

```
ip msdp border sa-address ethernet0
```

Related Commands

| Command | Description |
|------------------------------|---|
| ip msdp originator-id | Allows an MSDP speaker that originates a Source-Active message to use its interface’s IP address as the RP address in the SA message. |
| ip msdp redistribute | Configures which (S,G) entries from the multicast routing table are advertised in SA messages originated to MSDP peers. |

ip msdp cache-sa-state

To have the router create Source-Active (SA) state, use the **ip msdp cache-sa-state** command in global configuration mode.

ip msdp cache-sa-state

Syntax Description This command has no arguments or keywords.

Defaults The router creates SA state for all Multicast Source Discovery Protocol (MSDP) SA messages it receives.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|--|
| | 12.0(7)T | This command was introduced. |
| | 12.1(7) | This command was modified such that it is enabled by default and cannot be disabled. |

Usage Guidelines This command is automatically configured if at least one MSDP peer is configured. It cannot be disabled.

If you are running a version of Cisco IOS software prior to Release 12.1(7), we recommend enabling the **ip msdp cache-sa-state** command.

Examples The following example shows how the **ip msdp cache-sa-state** command is enabled when an MSDP peer is configured. For more MSDP configuration examples, refer to the “Configuring Multicast Source Discovery Protocol” chapter in the *Cisco IOS IP Configuration Guide*.

```
.
.
.
ip classless
ip msdp peer 192.168.1.2 connect-source Loopback0
ip msdp peer 192.169.1.7
ip msdp mesh-group outside-test 192.168.1.2
ip msdp cache-sa-state
ip msdp originator-id Loopback0
.
.
.
```

| Related Commands | Command | Description |
|------------------|-------------------------------|---|
| | clear ip msdp sa-cache | Clears MSDP SA cache entries. |
| | ip msdp sa-request | Configures the router to send SA request messages to the MSDP peer when a new joiner from the group becomes active. |
| | show ip msdp sa-cache | Displays (S, G) state learned from MSDP peers. |

ip msdp default-peer

To define a default peer from which to accept all Multicast Source Discovery Protocol (MSDP) Source-Active messages, use the **ip msdp default-peer** global configuration command. To remove the default peer, use the **no** form of this command.

ip msdp default-peer *ip-address* | *name* [**prefix-list** *list*]

no ip msdp default-peer

| Syntax Description | | |
|--------------------|---------------------------------|--|
| | <i>ip-address</i> <i>name</i> | IP address or Domain Name System (DNS) name of the MSDP default peer. |
| | prefix-list <i>list</i> | (Optional) Border Gateway Protocol (BGP) prefix-list that specifies the peer will be a default peer only for the prefixes listed in the list specified by the <i>list</i> argument. Of course, there must be a BGP prefix-list configured for this prefix-list <i>list</i> keyword and argument to have any effect. |

Defaults No default MSDP peer exists.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

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

If only one MSDP peer is configured (with the **ip msdp peer** command), that will be used as a default peer, no matter what. Therefore, you don't need to configure a default peer with this command.

If 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 if you intend to configure the **prefix-list** *list* keyword and argument with the **ip msdp default-peer** command.

If the **prefix-list** *list* keyword and argument are specified, SA messages originated from RPs covered by the **prefix-list** *list* keyword and argument will be accepted from the configured default peer. If the **prefix-list** *list* keyword and argument are specified but no prefix list is configured, the default peer will be used for all prefixes.

The following two bullets explain how you can enter multiple **ip msdp default-peer** commands, with or without the **prefix-list** keyword. However, all commands must either have the keyword or all must not have the keyword.

- When you use multiple **ip msdp default-peer** commands with the **prefix-list** keyword, you use all the default peers at the same time for different RP prefixes. This syntax is typically used in a Service Provider cloud that connects stub site clouds.
- When you use multiple **ip msdp default-peer** commands without the **prefix-list** keyword, you use a single active peer to accept all SA messages. If that peer goes down, then you move to the next configured default peer to accept all SA messages. This syntax is typically used at a stub site.

Examples

The following example configures the router named router.cisco.com as the default peer to the local router:

```
ip msdp peer 131.12.2.3
ip msdp peer 131.13.4.5
ip msdp default-peer router.cisco.com    !At a stub site
```

The following example configures two default peers:

```
ip msdp peer 131.12.2.3
ip msdp peer 131.13.4.5
ip msdp default-peer 131.12.2.3 prefix-list site-c
ip prefix-list site-a permit 131.12.0.0/16
ip msdp default-peer 131.13.4.5 prefix-list site-a
ip prefix-list site-a permit 131.13.0.0/16
```

Related Commands

| Command | Description |
|-----------------------|--------------------------|
| ip msdp peer | Configures an MSDP peer. |
| ip prefix-list | Creates a prefix list. |

ip msdp description

To add descriptive text to the configuration for a Multicast Source Discovery Protocol (MSDP) peer, use the **ip msdp description** global configuration command. To remove the description, use the **no** form of this command.

```
ip msdp description {peer-name | peer-address} text
```

```
no ip msdp description {peer-name | peer-address}
```

| Syntax Description | <i>peer-name</i> <i>peer-address</i> | Peer name or address to which this description applies. |
|--------------------|--|---|
| | <i>text</i> | Description of the MSDP peer. |

Defaults No description is associated with an MSDP peer.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

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

Examples The following example configures the router at the IP address 131.107.5.4 with a description indicating it is a router at customer A:

```
ip msdp description 131.107.5.4 router at customer a
```

ip msdp filter-sa-request

To configure the router to send Source-Active Request (SA Request) messages to the Multicast Source Discovery Protocol (MSDP) peer when a new joiner from a group becomes active, use the **ip msdp filter-sa-request** global configuration command. To prevent this action, use the **no** form of this command.

ip msdp filter-sa-request {*ip-address* | *name*} [**list** *access-list-number*]

no ip msdp filter-sa-request {*ip-address* | *name*}

| Syntax Description | | |
|--------------------|---------------------------------------|---|
| | <i>ip-address</i> <i>name</i> | IP address or name of the MSDP peer from which the local router requests Source-Active messages when a new joiner for the group becomes active. |
| | list <i>access-list-number</i> | (Optional) Standard IP access list number that describes a multicast group address. The access list number is in the range 1 to 99. If no access list is specified, all Source-Active Request messages are ignored. |

Defaults If this command is not configured, all Source-Active Request messages are honored. If this command is configured but no access list is specified, all SA Request messages are ignored.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

Usage Guidelines By default, the router honors all Source-Active Request messages from peers. Use this command if you want to control exactly which SA Request messages the router will honor.

If no access list is specified, all SA Request messages are ignored. If an access list is specified, only SA Request messages from those groups permitted will be honored, and all others will be ignored.

Examples The following example configures the router to filter Source-Active Request messages from the MSDP peer at 171.69.2.2. Source-Active Request messages from sources on the network 192.4.22.0 pass access list 1 and will be honored; all others will be ignored.

```
ip msdp filter sa-request 171.69.2.2 list 1
access-list 1 permit 192.4.22.0 0.0.0.255
```

| Related Commands | Command | Description |
|------------------|---------------------|--------------------------|
| | ip msdp peer | Configures an MSDP peer. |

ip msdp mesh-group

To configure a Multicast Source Discovery Protocol (MSDP) peer to be a member of a mesh group, use the **ip msdp mesh-group** global configuration command. To remove an MSDP peer from a mesh group, use the **no** form of this command.

```
ip msdp mesh-group name {ip-address | name}
```

```
no ip msdp mesh-group name {ip-address | name}
```

| Syntax Description | <i>name</i> | Name of the mesh group. |
|--------------------|---------------------------------|---|
| | <i>ip-address</i> <i>name</i> | IP address or name of the MSDP peer to be a member of the mesh group. |

Defaults The MSDP peers do not belong to a mesh group.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

Usage Guidelines A mesh group is a group of MSDP speakers that have fully meshed MSDP connectivity among themselves. Any 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 achieve two goals:

- To reduce SA message flooding
- To simplify peer-RPF flooding (no need to run BGP or MBGP among MSDP peers)

Examples The following example configures the MSDP peer at address 1.1.1.1 to be a member of the mesh group named internal:

```
ip msdp mesh-group internal 1.1.1.1
```

ip msdp originator-id

To allow a Multicast Source Discovery Protocol (MSDP) speaker that originates a Source-Active (SA) message to use the IP address of the interface as the rendezvous point (RP) address in the SA message, use the **ip msdp originator-id** global configuration command. To prevent the RP address from being derived in this way, use the **no** form of this command.

ip msdp originator-id *type number*

no ip msdp originator-id *type number*

| | | |
|---------------------------|--------------------|--|
| Syntax Description | <i>type number</i> | Interface type and number on the local router, whose IP address is used as the RP address in Source-Active messages. |
|---------------------------|--------------------|--|

| | |
|-----------------|--|
| Defaults | The RP address is used as the Originator ID. |
|-----------------|--|

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|----------------------|----------------------|
| Command Modes | Global configuration |
|----------------------|----------------------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | 12.0(7)T | This command was introduced. |

| | |
|-------------------------|---|
| Usage Guidelines | <p>The ip msdp originator-id command identifies an interface type and number to be used as the RP address in a Source-Active message.</p> <p>Use this command if you want to configure a logical RP. Because only RPs and MSDP border routers originate SAs, there are times when it is necessary to change the ID used for this purpose.</p> <p>If both the ip msdp border sa-address and the ip msdp originator-id commands are configured, the latter command prevails. That is, the address derived from the ip msdp originator-id command determines the address of the RP to be used in the SA message.</p> |
|-------------------------|---|

| | |
|-----------------|---|
| Examples | The following example configures the IP address of Ethernet interface 1 as the RP address in SA messages: |
|-----------------|---|

```
ip msdp originator-id ethernet1
```

| | | |
|-------------------------|-----------------------|--|
| Related Commands | Command | Description |
| | ip msdp border | Configures a router that borders a PIM sparse mode region and dense-mode region to use MSDP. |

ip msdp peer

To configure a Multicast Source Discovery Protocol (MSDP) peer, use the **ip msdp peer** global configuration command. To remove the peer relationship, use the **no** form of this command.

```
ip msdp peer {peer-name | peer-address} [connect-source type number] [remote-as
as-number]
```

```
no ip msdp peer {peer-name | peer-address}
```

| Syntax Description | |
|--|---|
| <i>peer-name</i> <i>peer-address</i> | DNS name or IP address of the router that is to be the MSDP peer. |
| connect-source <i>type number</i> | (Optional) Interface type and number whose primary address becomes the source IP address for the TCP connection. This interface is on the router being configured. |
| remote-as <i>as-number</i> | (Optional) Autonomous system number of the MSDP peer. This is used for display purposes only. There are cases where a peer might appear to be in another autonomous system (other than the one it really resides in) when you MSDP-peer but do not BGP-peer with that peer. In this case, if the prefix of the peer is injected by another autonomous system (AS), it is displayed as the AS number of the peer (and is misleading). |

Defaults No MSDP peer is configured.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

Usage Guidelines The router specified should also be configured as a BGP neighbor.
If you are also BGP peering with this MSDP peer, you should use the same IP address for MSDP as you do for BGP. However, you are not required to run BGP or MBGP with the MSDP peer, as long as there is a BGP or MBGP path between the MSDP peers. If there is not, you must configure the **ip msdp default-peer** command.

Examples

The following example configures the router at the IP address 131.108.1.2 as an MSDP peer to the local router. The neighbor belongs to autonomous system 109.

```
ip msdp peer 131.108.1.2 connect-source ethernet 0
router bgp 110
 network 131.108.0.0
 neighbor 131.108.1.2 remote-as 109
 neighbor 131.108.1.2 update-source ethernet 0
```

The following example configures the router named router.cisco.com as an MSDP peer to the local router:

```
ip msdp peer router.cisco.com
```

The following example configures that the router named router.cisco.com is an MSDP peer in AS 109. The primary address of Ethernet interface 0 is used as the source address for the TCP connection.

```
ip msdp peer router.cisco.com connect-source ethernet0 remote-as 109
```

Related Commands

| Command | Description |
|---------------------------|--|
| neighbor remote-as | Adds an entry to the BGP neighbor table. |

ip msdp redistribute

To configure which (S,G) entries from the multicast routing table are advertised in Source-Active (SA) messages originated to Multicast Source Discovery Protocol (MSDP) peers, use the **ip msdp redistribute** global configuration command. To remove the filter, use the **no** form of this command.

ip msdp redistribute [**list** *access-list-name*] [**asn** *aspath-access-list-number*] [**route-map** *map*]

no ip msdp redistribute

Syntax Description

| | |
|---|--|
| list <i>access-list-name</i> | (Optional) Name or number of a standard or extended IP access list that controls which local sources are advertised and to which groups they send. |
| asn <i>aspath-access-list-number</i> | (Optional) Standard or extended IP access list number in the range 1 to 199. This access list number must also be configured in the ip as-path command. |
| route-map <i>map</i> | (Optional) Standard or extended IP access list number in the range 1 to 199. This access list number must also be configured in the ip as-path command. |

Defaults

- If no portion of this command is configured, only local sources are advertised, provided they send to groups for which this router is a rendezvous point (RP).
- If no portion of this command is configured and if the **ip msdp border sa-address** command is configured, all local sources are advertised.
- If the **ip msdp redistribute** command is configured with no keywords, no multicast sources are advertised.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.0(7)T | This command was introduced. |

Usage Guidelines

This command affects SA message origination, not SA message forwarding. If you want to filter which SA messages are forwarded to MSDP peers, use the **ip msdp sa-filter in** or **ip msdp sa-filter out** command.

The **ip msdp redistribute** command controls which (S,G) pairs the router advertises from the multicast routing table. By default, only sources within the local domain are advertised. Use the following guidelines for the **ip msdp redistribute** command:

- If you specify the **list** *access-list-name* keyword and argument only, you filter which local sources are advertised and to what groups they send. The access list specifies a source address, source mask, group address, and group mask.

- If you specify the **asn** *aspath-access-list-number* keyword and argument only, you advertise all sources sending to any group, which sources pass the autonomous system path access list. The autonomous system path access list number refers to the **ip as-path** command, which specifies an access list. If the **asn 0** keyword is specified, sources from all autonomous systems are advertised. The **asn 0** keyword is useful when connecting dense-mode domains to a sparse mode domain running MSDP, or when using MSDP in a router that is not configured with BGP (and, therefore you do not know if a source is local or not).
- If you specify the **route-map** *map* keyword and argument only, you advertise all sources that satisfy the **match** criteria in the route map *map*.
- If you specify all three keywords (**list**, **asn**, and **route-map**), all conditions must be true before any multicast source is advertised in an SA message.
- If you specify the **ip multicast redistribute** command with no other keywords or arguments, no multicast sources are advertised.

Examples

The following example configures which (S,G) entries from the multicast routing table are advertised in SA messages originated to MSDP peers:

```
ip msdp redistribute route-map customer-sources

route-map customer-sources permit
match as-path customer-as

ip as-path access-list ^109$
```

Related Commands

| Command | Description |
|-----------------------|--|
| ip as-path | Defines a BGP-related access list. |
| ip msdp border | Configures a router that borders a PIM sparse mode region and dense-mode region to use MSDP. |

ip msdp sa-filter in

To configure an incoming filter list for Source-Active (SA) messages received from the specified Multicast Source Discovery Protocol (MSDP) peer, use the **ip msdp sa-filter in** global configuration command. To remove the filter, use the **no** form of this command.

ip msdp sa-filter in {*ip-address* | *name*} [**list** *access-list-name*] [**route-map** *map-tag*]

no ip msdp sa-filter in {*ip-address* | *name*} [**list** *access-list-name*] [**route-map** *map-tag*]

| Syntax Description | | |
|--------------------|-------------------------------------|---|
| | <i>ip-address</i> <i>name</i> | IP address or name of the MSDP peer from which the Source-Active messages are filtered. |
| | list <i>access-list-name</i> | (Optional) IP access list name. If no access list is specified, all source/group pairs from the peer are filtered. |
| | route-map <i>map-tag</i> | (Optional) Route map name. From the specified MSDP peer, passes only those SA messages that meet the match criteria in the route map <i>map-tag</i> . If all match criteria are true, a permit keyword from the route-map will pass routes through the filter. A deny keyword will filter routes. If both the list and the route-map keywords are used, all conditions must be true to pass any (S,G) pair in incoming SA messages. |

| Defaults | |
|----------|---|
| | <ul style="list-style-type: none"> If this command is not configured, no incoming messages are filtered; all SA messages are accepted from the peer. If the command is configured, but no access list or route map is specified, all source/group pairs from the peer are filtered. |

| Command Modes | |
|---------------|----------------------|
| | Global configuration |

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

Examples The following example configures that all Source-Active messages from the peer named router.cisco.com are filtered:

```
ip msdp peer router.cisco.com connect-source ethernet 0
ip msdp sa-filter in router.cisco.com
```

ip msdp sa-filter in**Related Commands**

| Command | Description |
|------------------------------|--|
| ip msdp peer | Configures an MSDP peer. |
| ip msdp sa-filter out | Configures an outgoing filter list for Source-Active messages sent to the specified MSDP peer. |

ip msdp sa-filter out

To configure an outgoing filter list for Source-Active messages sent to the specified Multicast Source Discovery Protocol (MSDP) peer, use the **ip msdp sa-filter out** global configuration command. To remove the filter, use the **no** form of this command.

```
ip msdp sa-filter out {ip-address | name} [list access-list-name] [route-map map-tag]
```

```
no ip msdp sa-filter out {ip-address | name} [list access-list-name] [route-map map-tag]
```

| Syntax Description | |
|-------------------------------------|---|
| <i>ip-address</i> <i>name</i> | IP address or DNS name of the MSDP peer to which the Source-Active messages are filtered. |
| list <i>access-list-name</i> | (Optional) Extended IP access list number or name. If no access list is specified, all source/group pairs are filtered. To the specified MSDP peer, passes only those Source-Active messages that pass the extended access list. If both the list and the route-map keywords are used, all conditions must be true to pass any (S,G) pairs in outgoing SA messages. |
| route-map <i>map-tag</i> | (Optional) Route map name. To the specified MSDP peer, passes only those Source-Active messages that meet the match criteria in the route map <i>map-tag</i> . If all match criteria are true, a permit from the route-map will pass routes through the filter. A deny will filter routes. If both the list and the route-map keywords are used, all conditions must be true to pass any (S,G) pairs in outgoing SA messages. |

Defaults

- If this command is not configured, no outgoing messages are filtered; all SA messages received are forwarded to the peer.
- If the command is configured, but no access list or route map is specified, all source/group pairs are filtered.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.0(7)T | This command was introduced. |

Examples

The following example allows only (S,G) pairs that pass access list 100 to be forwarded in a Source-Active message to the peer named router.cisco.com:

```
ip msdp peer router.cisco.com connect-source ethernet 0
ip msdp sa-filter out router.cisco.com list 100
access-list 100 permit ip 171.69.0.0 0.0.255.255 224.2.0.0 0.0.255.255
```

■ ip msdp sa-filter out

| Related Commands | Command | Description |
|------------------|-----------------------------|--|
| | ip msdp peer | Configures an MSDP peer. |
| | ip msdp sa-filter in | Configures an incoming filter list for Source-Active messages received from the specified MSDP peer. |

ip msdp sa-limit

To limit the number of Source-Active (SA) messages from a Multicast Source Discovery Protocol (MSDP) peer that the router will allow in the SA cache, use the **ip msdp sa-limit** command in global configuration mode. To remove this limit, use the **no** form of this command.

```
ip msdp sa-limit {peer-name | peer-address} sa-limit
```

```
no ip msdp sa-limit {peer-name | peer-address} sa-limit
```

| Syntax Description | | |
|---|--|--|
| <i>peer-name</i> <i>peer-address</i> | | Domain Name System (DNS) name or IP address of the router that is to be the MSDP peer. |
| <i>sa-limit</i> | | Maximum number of SA messages from an MSDP peer allowed in the SA cache. |

Defaults By default, no SA message limit is set.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 12.1(7) | This command was introduced. |

Usage Guidelines Use this command to prevent distributed denial of service attacks. We recommend configuring this command on all MSDP peer connections.

The output of the **show ip msdp count**, **show ip msdp peer**, and **show ip msdp summary** commands will display the number of SA messages from each MSDP peer that is in the SA cache. If the **ip msdp sa-limit** command is configured, the output of the **show ip msdp peer** command will also display the value of the SA message limit for each MSDP peer.

Examples The following example configures the SA message limit to 100 for the MSDP peer with IP address 131.108.1.2:

```
ip msdp sa-limit 131.108.1.2 100
```

| Related Commands | Command | Description |
|------------------|-----------------------------|---|
| | show ip msdp count | Displays the number of sources and groups originated in MSDP SA messages. |
| | show ip msdp peer | Displays detailed information about the MSDP peer. |
| | show ip msdp summary | Displays MSDP peer status. |

ip msdp sa-request

To configure the router to send Source-Active Request messages to the Multicast Source Discovery Protocol (MSDP) peer when a new joiner from the group becomes active, use the **ip msdp sa-request** global configuration command. To prevent this action, use the **no** form of this command.

```
ip msdp sa-request {ip-address | name}
```

```
no ip msdp sa-request {ip-address | name}
```

Syntax Description

ip-address | *name*

IP address or name of the MSDP peer from which the local router requests Source-Active messages when a new joiner for the group becomes active.

Defaults

The router does not send Source-Active Request messages to the MSDP peer.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.0(7)T | This command was introduced. |

Usage Guidelines

By default, the router does not send any Source-Active Request messages to its MSDP peers when a new member joins a group and wants to receive multicast traffic. The new member just waits to receive any Source-Active messages that eventually arrive.

Use this command if you want a new member of a group to learn the current, active multicast sources in a connected PIM sparse mode domain that are sending to a group. The router will send Source-Active Request messages to the specified MSDP peer when a new member joins a group. The peer replies with the information it is SA cache. If the peer does not have a cache configured, this command provides nothing.

An alternative to this command is using the **ip msdp cache-sa-state** command to have the router cache messages.

Examples

The following example configures the router to send Source-Active Request messages to the MSDP peer at 171.69.1.1:

```
ip msdp sa-request 171.69.1.1
```

Related Commands

| Command | Description |
|-------------------------------|--|
| ip msdp cache-sa-state | Causes the router to create Source-Active (SA) state, so when a multicast group member joins a group right after a Source-Active message arrives, the router can supply Source-Active information to the late joiner from cache. |
| ip msdp peer | Configures an MSDP peer. |

ip msdp shutdown

To administratively shut down a configured Multicast Source Discovery Protocol (MSDP) peer, use the **ip msdp shutdown** global configuration command. To bring the peer back up, use the **no** form of this command.

```
ip msdp shutdown {peer-address | peer-name}
```

```
no ip msdp shutdown {peer-address | peer-name}
```

Syntax Description

peer-address | *peer-name* IP address or name of the MSDP peer to shut down.

Defaults

No action is taken to shut down an MSDP peer.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.0(7)T | This command was introduced. |

Examples

The following example shuts down the MSDP peer at IP address 136.5.7.20:

```
ip msdp shutdown 136.5.7.20
```

Related Commands

| Command | Description |
|---------------------|--------------------------|
| ip msdp peer | Configures an MSDP peer. |

ip msdp ttl-threshold

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

```
ip msdp ttl-threshold {ip-address | name} ttl
```

```
no ip msdp ttl-threshold {ip-address | name}
```

| Syntax Description | <i>ip-address</i> <i>name</i> | IP address or name of the MSDP peer to which the <i>ttl</i> limitation applies. The default value of the <i>ttl</i> argument is 0, meaning all multicast data packets are forwarded to the peer until the TTL is exhausted. |
|--------------------|---------------------------------|---|
| | <i>ttl</i> | Time-to-live (TTL) value. |

| Defaults | <i>ttl</i> = 0 |
|----------|----------------|
|----------|----------------|

| Command Modes | Global configuration |
|---------------|----------------------|
|---------------|----------------------|

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.0(7)T | This command was introduced. |

| Usage Guidelines | This command limits which multicast data packets are sent in data-encapsulated SA messages. Only multicast packets with an IP-header TTL greater than or equal to the <i>ttl</i> argument are sent to the MSDP peer specified by the IP address or name. |
|------------------|--|
|------------------|--|

Use this command if you want to use TTL to scope your multicast data traffic. For example, you could limit internal traffic to a TTL of 8. If you want other groups to go to external locations, you would need to send those packets with a TTL greater than 8.

| Examples | The following example configures a TTL threshold of 8 hops: |
|----------|---|
|----------|---|

```
ip msdp ttl-threshold 8
```

| Related Commands | Command | Description |
|------------------|---------------------|--------------------------|
| | ip msdp peer | Configures an MSDP peer. |

show ip msdp count

To display the number of sources and groups originated in Multicast Source Discovery Protocol (MSDP) Source-Active (SA) messages and the number of SA messages from an MSDP peer in the SA cache, use the **show ip msdp count** command in EXEC mode.

```
show ip msdp count [as-number]
```

| | | |
|---------------------------|------------------|---|
| Syntax Description | <i>as-number</i> | (Optional) Displays the number of sources and groups originated in SA messages from the specified autonomous system number. |
|---------------------------|------------------|---|

| | |
|----------------------|------|
| Command Modes | EXEC |
|----------------------|------|

| Command History | Release | Modification |
|------------------------|----------------|---|
| | 12.0(7)T | |
| 12.1(7) | | This command was modified to display information about the number of SA messages from each MSDP peer in the SA cache. |

Usage Guidelines The **ip msdp cache-sa-state** command must be configured for this command to have any output.

Examples The following is sample output of the **show ip msdp count** command:

```
Router# show ip msdp count

SA State per Peer Counters, <Peer>: <# SA learned>
192.135.250.116: 24
144.228.240.253: 3964
172.17.253.19: 10
172.17.170.110: 11

SA State per ASN Counters, <asn>: <# sources>/<# groups>
Total entries: 4009
?: 198/98, 9: 1/1, 14: 107/57, 17: 7/5
18: 4/3, 25: 23/17, 26: 39/27, 27: 2/2
32: 19/7, 38: 2/1, 52: 4/4, 57: 1/1
68: 4/4, 73: 12/8, 81: 19/1, 87: 9/6
.
.
.
```

Table 117 describes the significant fields shown in the display.

Table 117 *show ip msdp count Field Descriptions*

| Field | Description |
|---------------------|---|
| 192.135.250.116: 24 | MSDP peer with IP address 192.135.250.116: 24 SA messages from the MSDP peer in the SA cache. |
| Total entries | Total number of SA entries in the SA cache. |
| 9: 1/1 | Autonomous system 9: 1 source/1 group |

Related Commands

| Command | Description |
|-------------------------------|--|
| ip msdp cache-sa-state | Enables the router to create SA state. |

show ip msdp peer

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

```
show ip msdp peer [peer-address | peer-name]
```

| | | |
|---------------------------|---------------------------------|---|
| Syntax Description | <i>peer-address peer-name</i> | (Optional) Domain Name System (DNS) name or IP address of the MSDP peer for which information is displayed. |
|---------------------------|---------------------------------|---|

| | |
|----------------------|------|
| Command Modes | EXEC |
|----------------------|------|

| Command History | Release | Modification |
|------------------------|----------------|---|
| | 12.0(7)T | |
| 12.1(7) | | This command was modified to display information about the SA message limit configured using the the ip msdp sa-limit command. |

Examples

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

```
Router# show ip msdp peer 192.135.250.116

MSDP Peer 192.135.250.116 (rtp5-rp1.cisco.com), AS 109 (configured AS)
Description:
Connection status:
  State: Up, Resets: 9, Connection source: Loopback2 (204.69.199.17)
  Uptime(Downtime): 1d10h, Messages sent/received: 436765/429062
  Output messages discarded: 0
  Connection and counters cleared 1w2d ago
SA Filtering:
  Input (S,G) filter: none, route-map: none
  Input RP filter: none, route-map: none
  Output (S,G) filter: none, route-map: none
  Output RP filter: none, route-map: none
SA-Requests:
  Input filter: none
  Sending SA-Requests to peer: disabled
Peer ttl threshold: 0
SAs learned from this peer: 32, SAs limit: 500
Input queue size: 0, Output queue size: 0
```

Table 118 describes the significant fields shown in the display.

Table 118 *show ip msdp peer Field Descriptions*

| Field | Description |
|-----------|---|
| MSDP Peer | IP address of the MSDP peer. |
| AS | Autonomous system to which the MSDP peer belongs. |
| State: | State of the MSDP peer. |

Table 118 *show ip msdp peer Field Descriptions (continued)*

| Field | Description |
|-----------------------------|---|
| Connection source: | Interface used to obtain the IP address for the TCP local connection address. |
| Uptime(Downtime): | Days and hours the MSDP peer is up or down. If the time is less than 24 hours, it is shown in terms of hours:minutes:seconds. |
| Messages sent/received: | Number of SA messages sent to the MSDP peer/number of SA messages received from the MSDP peer. |
| SA Filtering: | Information regarding access list filtering of SA input and output, if any. |
| SA-Requests: | Information regarding access list filtering of SA requests, if any. |
| SAs learned from this peer: | Number of SA messages from the MSDP peer in the SA cache. |
| SAs limit: | SA message limit for this MSDP peer. |

Related Commands

| Command | Description |
|---------------------|--------------------------|
| ip msdp peer | Configures an MSDP peer. |

show ip msdp sa-cache

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

```
show ip msdp sa-cache [group-address | source-address | group-name | source-name]
                    [group-address | source-address | group-name | source-name] [autonomous-system-number]
```

Syntax Description

| | |
|---|---|
| <i>group-address</i> <i>source-address</i> <i>group-name</i> <i>source-name</i> | (Optional) Group address, source address, group name, or source name of the group or source about which (source, group) information is displayed. If two address or names are specified, an (S, G) entry corresponding to those addresses is displayed. If only one group address is specified, all sources for that group are displayed. If no options are specified, the entire SA cache is displayed. |
| <i>autonomous-system-number</i> | (Optional) Only state originated by the autonomous system specified is displayed. |

Command Modes

EXEC

Command History

| Release | Modification |
|----------|------------------------------|
| 12.0(7)T | This command was introduced. |

Usage Guidelines

State is cached only if the **ip msdp cache-sa-state** command is configured.

Examples

The following is sample output of the **show ip msdp sa-cache** command:

```
Router# show ip msdp sa-cache

MSDP Source-Active Cache - 2398 entries
(137.39.41.33, 238.105.148.0), RP 137.39.3.111, MBGP/AS 704, 2d10h/00:05:33
(130.240.112.8, 224.2.0.1), RP 198.9.200.65, MBGP/AS 10888, 00:03:21/00:02:38
(171.69.10.13, 227.37.32.1), RP 137.39.3.92, MBGP/AS 704, 05:22:20/00:03:32
(134.67.66.18, 233.0.0.1), RP 137.39.3.111, MBGP/AS 704, 2d10h/00:05:35
(134.67.66.148, 233.0.0.1), RP 137.39.3.111, MBGP/AS 704, 2d10h/00:05:35
(171.69.10.13, 227.37.32.2), RP 137.39.3.92, MBGP/AS 704, 00:44:30/00:01:31
(128.223.70.203, 224.2.236.2), RP 128.223.253.7, MBGP/AS 3582, 02:34:16/00:05:49
(206.190.42.104, 236.195.56.2), RP 137.39.3.92, MBGP/AS 704, 04:21:13/00:05:22
(171.69.10.13, 227.37.32.3), RP 137.39.3.92, MBGP/AS 704, 00:44:30/00:02:31
(161.44.15.43, 224.0.92.3), RP 198.9.200.65, MBGP/AS 10888, 6d09h/00:05:35
(161.44.15.111, 224.0.92.3), RP 198.9.200.65, MBGP/AS 10888, 16:18:08/00:05:35
(161.44.21.45, 224.0.92.3), RP 198.9.200.65, MBGP/AS 10888, 16:18:08/00:05:35
(161.44.15.75, 224.0.92.3), RP 198.9.200.65, MBGP/AS 10888, 08:40:52/00:05:35
(161.44.15.100, 224.0.92.3), RP 198.9.200.65, MBGP/AS 10888, 08:40:52/00:05:35
(171.69.10.13, 227.37.32.6), RP 137.39.3.92, MBGP/AS 704, 00:45:30/00:05:31
(137.39.41.33, 224.247.228.10), RP 137.39.3.111, MBGP/AS 704, 2d10h/00:05:35
(128.146.222.210, 224.2.224.13), RP 137.39.3.92, MBGP/AS 704, 01:51:53/00:05:22
(137.39.41.33, 229.231.124.13), RP 137.39.3.111, MBGP/AS 704, 2d10h/00:05:33
```

```
(128.223.32.138, 224.2.200.23), RP 128.223.253.7, MBGP/AS 3582, 21:33:40/00:05:49
(128.223.75.244, 224.2.200.23), RP 128.223.253.7, MBGP/AS 3582, 21:33:40/00:05:49
```

Table 119 describes the significant fields in the display.

Table 119 *show ip msdp sa-cache Field Descriptions*

| Field | Description |
|-------------------------------|--|
| (137.39.41.33, 238.105.148.0) | The first address (source) is sending to the second address (group). |
| RP 137.39.3.111 | RP address in the originating domain where the SA messages started. |
| MBGP/AS 704 | RP is in AS 704 according to MBGP. |
| 2d10h/00:05:33 | The route has been cached for 2 days and 10 hours. If no SA message is received in 5 minutes and 33 seconds, it will be removed from the SA cache. |

Related Commands

| Command | Description |
|-------------------------------|---|
| clear ip msdp sa-cache | Clears MSDP Source-Active cache entries. |
| ip msdp cache-sa-state | Causes the router to create Source-Active state, so when a multicast group member joins a group right after a Source-Active message arrives, the router can supply Source-Active information to the late joiner from cache. |

show ip msdp summary

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

show ip msdp summary

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|----------|---|
| | 12.0(7)T | This command was introduced. |
| | 12.1(7) | This command was modified to display information about the number of SA messages from each MSDP peer in the SA cache. |

Examples The following is sample output of the **show ip msdp summary** command:

```
Router# show ip msdp summary
```

```
MSDP Peer Status Summary
Peer Address      AS      State  Uptime/  Reset SA   Peer Name
                  AS      State  Downtime Count Count
192.135.250.116  109    Up      1d10h    9      111    rtp5-rp1
*144.228.240.253 1239   Up      14:24:00 5      4010   sl-rp-stk
172.17.253.19    109    Up      12:36:17 5      10     shinjuku-rp1
172.17.170.110  109    Up      1d11h    9      12     ams-rp1
```

Table 120 describes the significant fields shown in the display.

Table 120 *show ip msdp summary Field Descriptions*

| Field | Description |
|-----------------|---|
| Peer Address | IP address of the MSDP peer. |
| AS | Autonomous system to which the MSDP peer belongs. |
| State | State of the MSDP peer. |
| Uptime/Downtime | Days and hours the MSDP peer is up or down, per state shown in the previous column. If the time is less than 24 hours, it is shown in terms of hours:minutes:seconds. |
| SA Count | Number of SA messages from this MSDP peer in the SA cache. |
| Peer Name | Name of the MSDP peer. |