

Multicast Source Discovery Protocol (MSDP)

Feature Overview and Configuration Guide

Introduction

This guide describes Multicast Source Discovery Protocol (MSDP) and how to configure it.

MSDP provides a mechanism to connect multiple PIM Sparse-Mode (PIM-SM) domains together. Each PIM-SM domain uses its own independent Rendezvous Point(s) (RPs), and does not have to depend on RPs in other domains.

MSDP can be used in three scenarios:

- **Inter-domain:** An MSDP-speaking router in a PIM-SM domain has an MSDP peering relationship with one or more MSDP-speaking router(s) in another domain(s). One MSDP-speaking router shares information on sources originating in its domain by sending SA (Source-Active) messages to its peer(s).
- **Inter-domain Mesh Group:** MSDP-speaking routers are configured as an MSDP Mesh.
- **Intra-domain Mesh Group:** MSDP is used between Anycast-RPs [RFC3446] within a single PIM-SM domain to synchronize information about the active sources being served by each Anycast-RP peer (by virtue of IGP reachability). MSDP peering used in this scenario is based on MSDP mesh groups, where typically two to tens of peers can comprise a given mesh group.

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Products and software version that apply to this guide

This guide applies to AlliedWare Plus™ products that support MSDP, running version **5.5.1-0.1** or later.

To see whether your product supports MSDP, see the following documents:

- The product's [Datasheet](#)
- The product's [Command Reference](#)

These documents are available from the above links on our website at alliedtelesis.com.

Related documents

The following documents give more information about multicast features on AlliedWare Plus products:

- the [Protocol Independent Multicast - Sparse Mode \(PIM-SM\) Feature Overview and Configuration Guide](#)
- the [WAN-LAN PIM Multicast Routing and LAN IGMP Feature Overview and Configuration Guide](#)
- The product's [Command Reference](#)

These documents are available from the links above or on our website at alliedtelesis.com

Key concepts

Source-Active message

If an RP has active sources to advertise, it does this by sending one or more Source-Active (SA) messages.

The SA message contains the following fields:

- The source address of the data source.
- The group address the data source sends to.
- The IP address of the RP.

The purpose of this sharing is to allow domains to discover multicast sources from other domains. If the multicast sources are of interest to a domain which has receivers, the normal source-tree building mechanism in PIM-SM will be used to deliver multicast data over an inter-domain distribution tree.

MSDP default peer

A default MSDP peer is a peer from which all or a subset of (SA) messages received from the peer will be accepted without Reverse Path Forwarding (RPF) checking being performed. The concept of default MSDP peer is useful when we do not have any routing information to perform an RPF check with (for example, because there is no MBGP peering between ASes where the MSDP peers reside).

If multiple MSDP default peers are defined, the first active peer accepts all SA messages. If that peer fails, the next configured default peer accepts all SA messages. This can be used in a stub network.

MSDP mesh group

A mesh group is used in a PIM-SM intra-domain setting to reduce SA message flooding. The MSDP speakers must be configured in a full mesh topology to create a mesh group. A member of the mesh

group does not forward SA messages to other members, as the originator of the SA will forward it to all members of the group.

Mesh group forwarding semantics:

- If a member of a mesh group receives an SA message from another member of the group, it will only forward it to the MSDP peers that are not part of the same group.
- If a member of a mesh group receives an SA message from an MSDP peer outside the group, and the message passes peer-RPF check, then the member will forward the message to other members of its group, and to any other MSDP peers outside the group.

MSDP filters

MSDP uses the access control list feature to configure filters for each MSDP peer to permit or deny SA messages. The filters can be configured to permit or deny SA messages to or from a Source, Group, or Rendezvous Point address. When using an access list to filter on (S,G) the source field matches on SA Source Address (S) and the destination field matches on SA Group Address (G). When using access list to filter on RP address the source field matches on SA RP Address and the destination field is unused.

Timers

Configurable timers

All configurable MSDP timer timeout periods are configured globally, and affect all peers configured on a device. Timers can also be configured on a per-peer basis. For more information about configuring timers, refer to the product's [Command Reference](#).

MSDP SA cache timer

Each non-local SA cache entry (representing one multicast source) has its own SA state timer. This timer is restarted and reset to the MSDP SA cache timeout period every time an (S,G) message is received for that entry.

The MSDP SA cache timeout period has a range of 75 to 300 seconds, with a default of 75 seconds.

If the SA state timer expires after the MSDP SA cache timeout period, the SA entry in the cache is deleted, as it is perceived that the source is no longer available.

Peer hold timer

Each MSDP peer maintains its own MSDP peer hold timer. This timer is set to the MSDP peer hold timer interval, and started when the peer's transport connection (TCP connection) is established. The timer is re-started and reset to the MSDP peer hold timer interval any time an MSDP message for that peer is received.

The MSDP peer hold timer interval has a range of 15 to 75 seconds, with a default of 75 seconds.

On expiry of the MSDP peer hold timer, the peer's TCP connection is closed.

MSDP keep-alive timer

Each MSDP peer maintains its own MSDP keep-alive timer. The keep-alive timer is set to keep-alive period when the peer comes up.

The MSDP keep-alive timer has a range of 10 to 60 seconds, with a default of 60 seconds.

On expiry, the timer is restarted and reset to the keep-alive period each time an MSDP message is sent to the peer.

Note: The keep-alive period configured on one device **MUST** be less than the hold time period configured by its peer. Otherwise, there is a possibility that the TCP connection will be constantly torn down and restarted if there is not regular SA message traffic within the hold time period.

Fixed timers

MSDP SA advertisement timer

There is one MSDP SA advertisement timer per RP. RPs that originate SA messages do so periodically, as long as there is data being sent by the source.

An RP starts the SA advertisement timer when the MSDP process is configured. When the timer expires, an RP resets the timer to the value of the SA advertisement period in seconds, and begins the advertisement of its active sources.

The SA advertisement period is set at 60 seconds.

An SA should not be sent more than once in the SA advertisement period, apart from the following exceptions:

- An originating RP will trigger the transmission of an SA message as soon as it receives data from an internal source for the first time.
- All cached SA messages are sent when the link is first established.

MSDP connect retry timer

MSDP's transport protocol is TCP. When an MSDP peer is configured, the local and remote IPs must be configured. The IP address with the lower IP address is responsible for initiating the TCP connection. The MSDP connect retry timer is started when the connection is first attempted. If the connection is not successful within the connect retry period, the timer connection is retried and the timer restarted.

MSDP connect retry period is set at 30 seconds.

Supported limits

We recommend the following maximum number of peers on each platform:

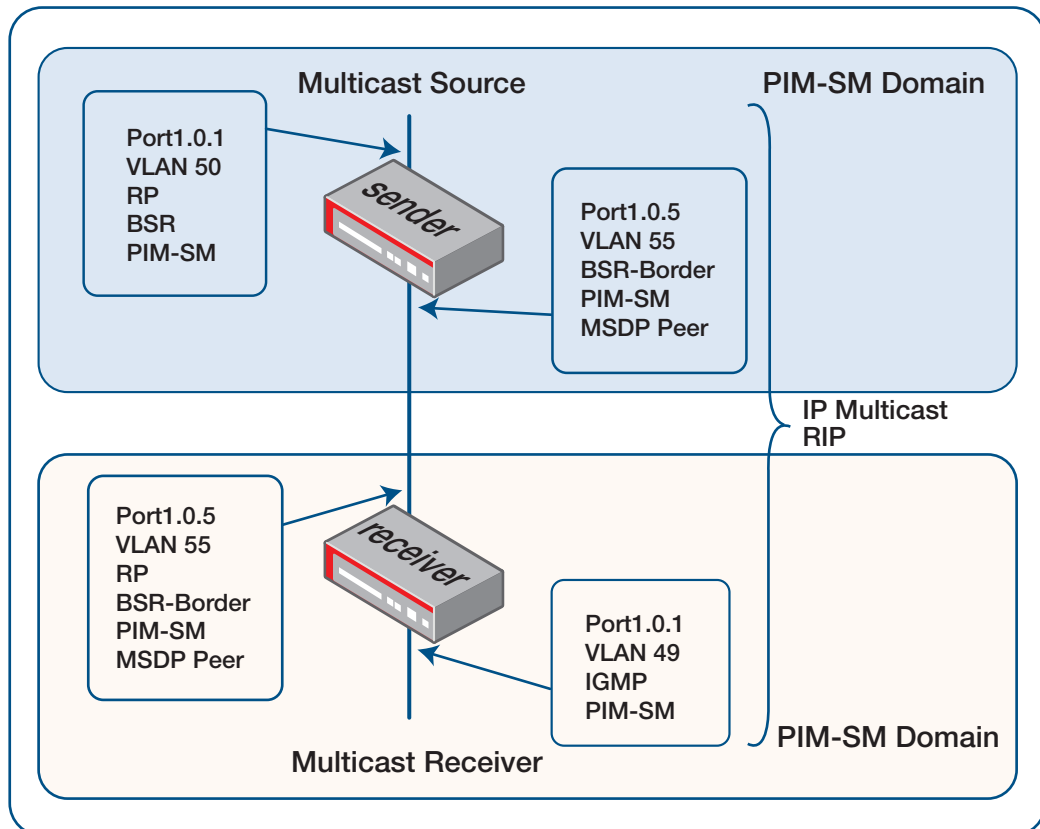
Table 1: Recommended maximum MSDP peers by platform

PLATFORM	RECOMMENDED MAXIMUM MSDP PEERS
SBx8100CFC960	100
SBx908 GEN2	100
x950	100
x930	100
x550	16
x530	16
x320	16

Configuration examples

Inter-domain MSDP peer

This example is a simple two device network across two separate PIM-SM domains, one sending a stream, one receiving.



Sender

```

!
hostname Sender
!
ip multicast-routing
!
vlan database
vlan 50,55 state enable
!

ip pim bsr-candidate vlan50
ip pim rp-candidate vlan50
ip msdp peer 172.16.55.1 local-address 172.16.55.12
!
interface port1.0.1
switchport
switchport mode access
switchport access vlan 50
!

```

```

interface port1.0.5
switchport
switchport mode access
switchport access vlan 55
!
interface port1.0.7
switchport
switchport mode access
switchport access vlan 100
!

interface vlan50
ip address 172.16.50.12/24
ip pim sparse-mode
!
interface vlan55
ip address 172.16.55.12/24
ip pim bsr-border
ip pim sparse-mode
!
router rip
network 172.16.0.0/16

```

Receiver

```

!
hostname receiver
!
ip multicast-routing
!
vlan database
vlan 49,55 state enable
!
ip pim bsr-candidate vlan55
ip pim rp-candidate vlan55
ip msdp peer 172.16.55.12 local-address 172.16.55.1
!

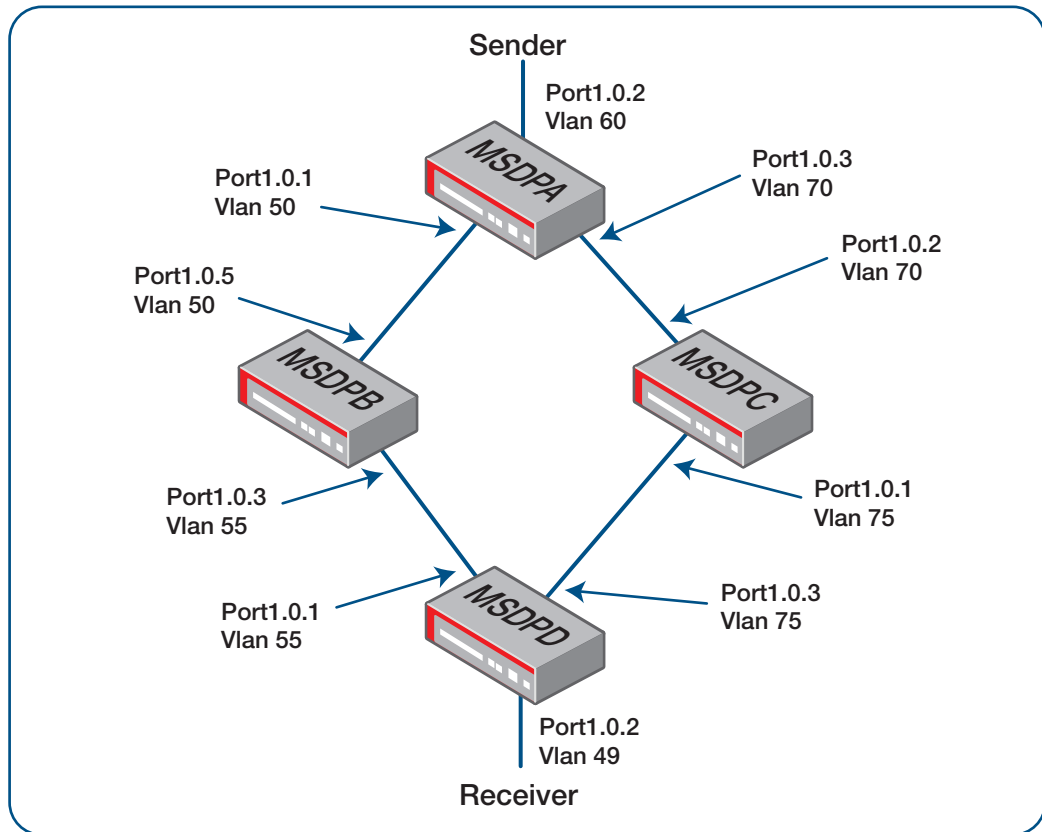
interface port1.0.1
switchport
switchport mode access
switchport access vlan 49
!
interface port1.0.5
switchport
switchport mode access
switchport access vlan 55
!

interface vlan49
ip address 172.16.49.1/24
ip igmp
ip pim sparse-mode
!
interface vlan55
ip address 172.16.55.1/24
ip pim bsr-border
ip pim sparse-mode
!
router rip
network 172.16.0.0/16

```


Inter-domain mesh group

In this example, most interfaces are configured as PIM-SM border routers, so each interface is in a different PIM-SM domain.



MSDPA

```
hostname MSDPA
!
ip multicast-routing
!
vlan database
  vlan 50,60,70 state enable
!
ip pim bsr-candidate vlan70
ip pim rp-candidate vlan70
ip msdp mesh-group test local-address 172.16.70.25
ip msdp mesh-group test member 172.16.50.12
ip msdp mesh-group test member 172.16.55.1
ip msdp mesh-group test member 172.16.75.12
!
```

```

interface port1.0.1
  switchport
  switchport mode access
  switchport access vlan 50
!
interface port1.0.2
  switchport
  switchport mode access
  switchport access vlan 60
!

interface port1.0.3
  switchport
  switchport mode access
  switchport access vlan 70
!
interface vlan50
  ip address 172.16.50.25/24
  ip pim sparse-mode
!

interface vlan60
  ip address 172.16.60.12/24
  ip pim sparse-mode
!
interface vlan70
  ip address 172.16.70.25/24
  ip pim sparse-mode
!
router rip
  network 172.16.0.0/16
!

```

MSDPB

```

hostname MSDPB
!
ip multicast-routing
!
vlan database
  vlan 50,55 state enable
!
ip pim bsr-candidate vlan50
ip pim rp-candidate vlan50
ip msdp mesh-group test local-address 172.16.50.12
ip msdp mesh-group test member 172.16.55.1
ip msdp mesh-group test member 172.16.70.25
ip msdp mesh-group test member 172.16.75.12
!

interface port1.0.3
  switchport
  switchport mode trunk
  switchport trunk allowed vlan add 55
!
interface port1.0.5
  switchport
  switchport mode access
  switchport access vlan 50
!

```

```

interface vlan50
 ip address 172.16.50.12/24
 ip pim bsr-border
 ip pim sparse-mode
!
interface vlan55
 ip address 172.16.55.12/24
 ip pim bsr-border
 ip pim sparse-mode
!
router rip
 network 172.16.0.0/16

```

MSDPC

```

hostname MSDPC
!
ip multicast-routing
!
vlan database
 vlan 70,75 state enable
!
ip pim bsr-candidate vlan75
ip pim rp-candidate vlan75
ip msdp mesh-group test local-address 172.16.75.12
ip msdp mesh-group test member 172.16.50.12
ip msdp mesh-group test member 172.16.55.1
ip msdp mesh-group test member 172.16.70.25
!

interface port1.0.1
 switchport
 switchport mode access
 switchport access vlan 75
!
interface port1.0.2
 switchport
 switchport mode access
 switchport access vlan 70
!

interface vlan70
 ip address 172.16.70.12/24
 ip pim bsr-border
 ip pim sparse-mode
!
interface vlan75
 ip address 172.16.75.12/24
 ip pim bsr-border
 ip pim sparse-mode
!
router rip
 network 172.16.0.0/16

```

MSDP

```
hostname MSDPD
!
ip multicast-routing
!
vlan database
  vlan 49,55,75 state enable
!
ip pim bsr-candidate vlan55
ip pim rp-candidate vlan55
ip msdp mesh-group test local-address 172.16.55.1
ip msdp mesh-group test member 172.16.50.12
ip msdp mesh-group test member 172.16.70.25
ip msdp mesh-group test member 172.16.75.12
!

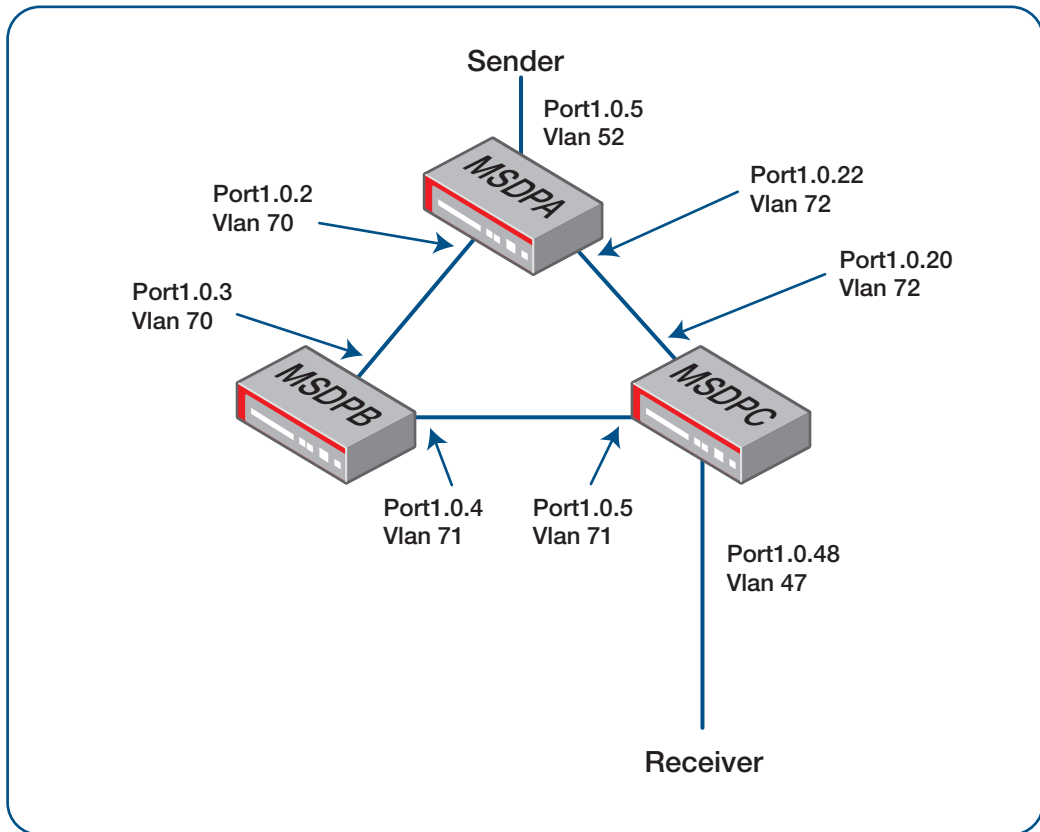
interface port1.0.1
  switchport
  switchport mode trunk
  switchport trunk allowed vlan add 55
!
interface port1.0.2
  switchport
  switchport mode access
  switchport access vlan 49
!

interface port1.0.3
  switchport
  switchport mode access
  switchport access vlan 55
!
interface vlan49
  ip address 172.16.49.1/24
  ip igmp
  ip pim sparse-mode
!

interface vlan55
  ip address 172.16.55.1/24
  ip pim bsr-border
  ip pim sparse-mode
!
interface vlan75
  ip address 172.16.75.1/24
  ip pim bsr-border
  ip pim sparse-mode
!
router rip
  network 172.16.0.0/16
```

Intra-domain mesh group

In this example, each router must have a loopback interface with the same IP address. In addition, each router must be configured with all MSDP mesh group members and their IP addresses.



MSDPA

```

!
service password-encryption
!
hostname MSDPA
!
ip multicast-routing
!
spanning-tree mode rstp
!
service power-inline
lACP global-passive-mode enable
no spanning-tree rstp enable
!

```

```

switch 1 provision x930-52
switch 1 bay 1 provision x9EM-4
!
vlan database
vlan 52,69-72 state enable
!
ip pim rp-address 172.16.111.1 group-list 224.0.0.0/4
ip msdp mesh-group test local-address 172.16.70.16
ip msdp mesh-group test member 172.16.71.17
ip msdp mesh-group test member 172.16.71.18
!

interface port1.0.2
switchport
switchport mode access
switchport access vlan 70
!
interface port1.0.5
switchport
switchport mode access
switchport access vlan 52
!

interface port1.0.22
switchport
switchport mode access
switchport access vlan 72
!
interface lo
ip address 172.16.111.1/32
ip pim sparse-mode
!

interface vlan52
ip address 172.16.52.16/24
ip pim sparse-mode
!
interface vlan69
ip address 10.36.20.138/24
ip pim bsr-border
ip pim sparse-mode passive
!

interface vlan70
ip address 172.16.70.16/24
ip pim sparse-mode
!
interface vlan71
ip address 172.16.71.16/24
ip pim sparse-mode
!

interface vlan72
ip address 172.16.72.16/24
ip pim sparse-mode
!
router rip
network 172.16.0.0/16
redistribute connected
!
end

```

MSDPB

```
!  
hostname MSTPB  
!  
ip multicast-routing  
!  
spanning-tree mode rstp  
!  
lacp global-passive-mode enable  
no spanning-tree rstp enable  
!  
  
vlan database  
vlan 69-71 state enable  
!  
ip pim rp-address 172.16.111.1 group-list 224.0.0.0/4  
ip msdp mesh-group test local-address 172.16.71.17  
ip msdp mesh-group test member 172.16.70.16  
ip msdp mesh-group test member 172.16.71.18  
!  
interface port1.0.3  
switchport  
switchport mode access  
switchport access vlan 70  
!  
  
interface port1.0.4  
switchport  
switchport mode access  
switchport access vlan 71  
!  
interface lo  
ip address 172.16.111.1/32  
ip pim sparse-mode  
!  
  
interface vlan69  
ip pim sparse-mode  
!  
interface vlan70  
ip address 172.16.70.17/24  
ip pim sparse-mode  
!  
interface vlan71  
ip address 172.16.71.17/24  
ip pim sparse-mode  
!  
  
router rip  
network 172.16.0.0/16  
redistribute connected  
!  
ip route 10.33.0.0/16 10.37.253.33  
!  
end
```

MSDPC

```
!  
hostname MSDPC  
!  
ip multicast-routing  
!  
vlan database  
vlan 47,71-72 state enable  
!  
ip pim rp-address 172.16.111.1 group-list 224.0.0.0/4  
ip msdp mesh-group test local-address 172.16.71.18  
ip msdp mesh-group test member 172.16.70.16  
ip msdp mesh-group test member 172.16.71.17  
!  
  
interface port1.0.5  
switchport  
switchport mode access  
switchport access vlan 71  
!  
interface port1.0.20  
switchport  
switchport mode access  
switchport access vlan 72  
!  
  
interface port1.0.48  
switchport  
switchport mode access  
switchport access vlan 47  
!  
interface lo  
ip address 172.16.111.1/32  
ip pim sparse-mode  
!  
  
interface vlan47  
ip address 172.16.47.18/24  
ip igmp  
ip pim sparse-mode  
!  
interface vlan71  
ip address 172.16.71.18/24  
ip pim sparse-mode  
!  
  
interface vlan72  
ip address 172.16.72.18/24  
ip igmp  
ip pim sparse-mode  
!  
router rip  
network 172.16.0.0/16  
!  
end
```


Show commands

The following commands show information about your MSDP configuration. For more information about these commands, refer to the product's [Command Reference](#).

show debugging msdp

Use this command to display which MSDP debugging options are currently enabled. Debugging is either on or off for each option.

Example output from the **show debugging msdp** command:

```
awplus# show debugging msdp
MSDP debugging status:
  MSDP state debugging is on
  MSDP incoming packet debugging is on
  MSDP outgoing packet debugging is off
  MSDP peer hold timer debugging is off
  MSDP peer connect timer debugging is off
  MSDP peer keep-alive timer debugging is off
  MSDP source-active state timer debugging is on
  MSDP source-active advertisement timer debugging is off
```

Table 2: Parameters in the output from show debugging msdp

PARAMETER	DESCRIPTION
MSDP state	If enabled, shows when a peer has a change of state.
MSDP incoming packet	If enabled, shows when MSDP packets are received by the device.
MSDP outgoing packet	If enabled, shows when MSDP packets are transmitted by the device.
MSDP peer hold timer	If enabled, shows activity related to the peer hold timer, for example, when the timer starts, expires, or is reset.
MSDP peer connect timer	If enabled, shows activity related to the peer hold timer, for example, when the timer is starts or expires.
MSDP peer keep-alive timer	If enabled, shows activity related to the peer keep-alive timer, for example, when the timer starts, expires, or is reset.
MSDP source-active state timer	If enabled, shows activity related to the source-active state timer, for example, when the timer starts, expires, or is reset.
MSDP source-active advertisement timer	If enabled, shows activity related to the source-active advertisement timer, for example, when the timer starts, expires, or is reset.

show ip msdp mesh-group

Use this command to show information about the MSDP mesh-groups and the members within them.

Example output from the **show ip msdp mesh-group** command:

```
awplus# show ip msdp mesh-group

MSDP Mesh Group information:

-----
Mesh Group           : group1
-----
Local address        : 172.168.2.5
Members              : 0

-----

Mesh Group           : group2
-----
Local address        : 172.16.48.134
Members              : 2

Peer address         : 172.16.30.6
Local address        : 172.16.48.134
State                : Listening

Peer address         : 172.16.48.133
Local address        : 172.16.48.134
State                : Established
```

Example output from the **show ip msdp mesh-group group2** command:

```
awplus# show ip msdp mesh-group group2

MSDP Mesh Group information:

-----
Mesh Group           : group2
-----
Local address        : 172.16.48.134
Members              : 2

Peer address         : 172.16.30.6
Local address        : 172.16.48.134
State                : Listening

Peer address         : 172.16.48.133
Local address        : 172.16.48.134
State                : Established
```

Example output from the **show ip msdp mesh-group group2 member 172.16.48.133** command:

```
awplus# show ip msdp mesh-group group2 member 172.16.48.133

MSDP Mesh Group information:

-----
Mesh Group           : group2
-----
Local address        : 172.16.48.134
Members              : 2

Peer address         : 172.16.48.133
Local address        : 172.16.48.134
State                : Established
```

Example output from the **show ip msdp mesh-group group2 member 172.16.48.133 detail** command:

```
awplus# show ip msdp mesh-group group2 member 172.16.48.133 detail

MSDP Mesh Group information:

-----
Mesh Group           : group2
-----

Local address        : 172.16.48.134
Members              : 2

Peer address         : 172.16.48.133
Local address        : 172.16.48.134
State                : Established
Configured default peer : No
Mesh-group           : group2

Counters:
  Keep Alive receive      : 19
  Keep Alive transmit     : 19
  Keep Alive receive error : 0
  Source Active receive   : 20
  Source Active transmit  : 0
  Source Active receive error : 0
  Unknown TLV receive     : 20

Timers (remaining seconds):
  Peer Hold               : 21
  Keep Alive               : 0
  Connect Retry           : 0

SA Filters:
  SG filter out           : None
  SG filter in            : None
  RP filter out           : None
  RP filter in            : None

Counters:
  Out Permit              : 0
  Out Deny                : 0
  In Permit               : 0
  In Deny                 : 0
```

Table 3: Parameters in the output from show ip msdp mesh-group

PARAMETER	DESCRIPTION
Default peer	Yes if the peer is a default peer, and No if not.
Mesh-group	If the peer is a member of a mesh-group then the name of the mesh-group will be displayed, otherwise "--".
Keep Alive receive	The number of keep alive messages the peer has received.
Keep Alive transmit	The number of keep alive messages the peer has transmitted.
Keep Alive receive error	The number of keep alive messages that have been received that contained errors.
Source active receive	The number of source active messages the peer has received.
Source active transmit	The number of source active messages the peer has transmitted.
Source active receive error	The number of source active messages that have been received that contained errors.
Unknown TLV receive	The number of messages received by the peer that were not keep alive or source active messages.
Peer Hold	The seconds remaining until the peer hold timer expires, at which point the peer connection ends.
Keep Alive	The seconds remaining until the keep alive timer expires, at which point the peer will send out a keep alive message.
Connect Retry	The seconds remaining till the connect retry timer expires, at which point another attempt is made to connect to the peer.
SG filter out	The name of the filter based on the source and group address of outgoing source active messages.
SG filter in	The name of the filter based on the source and group address of incoming source active messages.
RP filter out	The name of the filter based on the RP address of outgoing source active messages.
RP filter in	The name of the filter based on the RP address of incoming source active messages.
Out permit	The number of SA messages that have been permitted to send.
Out deny	The number of SA messages that have been denied from being sent.
In permit	The number of SA messages that have been permitted to be received.
In deny	The number of SA messages that have been denied to be received.

show ip msdp peer

Use this command to display MSDP peers, their addresses, and their current status. Use the **detail** parameter to display additional information on timers, filters, and counters.

Example output from the **show ip msdp peer** command:

```
awplus#show ip msdp peer

MSDP Peer Information:

Default peer           : None

Peer address           : 192.168.1.3
Local address          : 192.168.1.2
State                  : Established

Peer address           : 192.168.1.5
Local address          : 192.168.1.4
State                  : Connecting
```

Example output from the **show ip msdp peer 192.168.1.3** command:

```
awplus#show ip msdp peer 192.168.1.3

MSDP Peer Information:

Peer address           : 192.168.1.3
Local address          : 192.168.1.2
State                  : Established
```

Example output from the **show ip msdp peer 192.168.1.3 detail** command:

```
awplus#show ip msdp peer 192.168.1.3 detail

MSDP Peer Information:

Peer address           : 192.168.1.3
Local address          : 192.168.1.2
State                  : Established
Configured default peer : No
Mesh-group             : --

Counters:
  Keep Alive receive    : 32
  Keep Alive transmit   : 32
  Keep Alive receive error : 0
  Source Active receive : 32
  Source Active transmit : 0
  Source Active receive error : 0
  Unknown TLV receive   : 0

Timers (remaining seconds):
  Peer Hold             : 35
  Keep Alive            : 20
  Connect Retry         : 0
```

```

SA Filters:
  SG filter out           : -
  SG filter in           : -
  RP filter out          : -
  RP filter in           : -
Counters:
  Out Permit             : 0
  Out Deny               : 0
  In Permit              : 1472
  In Deny                : 0

```

Table 4: Parameters in the output from show ip msdp peer

PARAMETER	DESCRIPTION
Default peer	Yes if the peer is a default peer, and No if not.
Mesh-group	If the peer is a member of a mesh-group then the name of the mesh-group will be displayed, otherwise "--".
Keep Alive receive	The number of keep alive messages the peer has received.
Keep Alive transmit	The number of keep alive messages the peer has transmitted.
Keep Alive receive error	The number of keep alive messages that have been received that contained errors.
Source active receive	The number of source active messages the peer has received.
Source active transmit	The number of source active messages the peer has transmitted.
Source active receive error	The number of source active messages that have been received that contained errors.
Unknown TLV receive	The number of messages received by the peer that were not keep alive or source active messages.
Peer Hold	The seconds remaining until the peer hold timer expires, at which point the peer connection ends.
Keep Alive	The seconds remaining until the keep alive timer expires, at which point the peer will send out a keep alive message.
Connect Retry	The seconds remaining till the connect retry timer expires, at which point another attempt is made to connect to the peer.
SG filter out	The name of the filter based on the source and group address of outgoing source active messages.
SG filter in	The name of the filter based on the source and group address of incoming source active messages.
RP filter out	The name of the filter based on the RP address of outgoing source active messages.

Table 4: Parameters in the output from show ip msdp peer

PARAMETER	DESCRIPTION
RP filter in	The name of the filter based on the RP address of incoming source active messages.
Out permit	The number of SA messages that have been permitted to send.
Out deny	The number of SA messages that have been denied from being sent.
In permit	The number of SA messages that have been permitted to be received.
In deny	The number of SA messages that have been denied to be received.

show ip msdp sa-cache

Use this command to display information about the MSDP Source Address Cache (SA-cache) entries.

Example output from the **show ip msdp sa-cache** command:

```
awplus# show ip msdp sa-cache

MSDP Source-Active cache:

Source-Active advertisement expiry (secs): 51

RP Address      Source Address  Group Address  Local  Expiry (secs)
-----
172.16.48.133  10.36.20.1     232.0.0.8     Yes   0
172.16.48.133  10.36.20.1     239.254.1.1   Yes   0
172.16.48.133  10.36.20.1     239.254.1.2   Yes   0
172.16.48.133  10.36.20.1     239.254.1.3   Yes   0
172.16.48.133  10.36.20.1     239.254.1.4   Yes   0
172.16.48.133  10.36.20.1     239.254.1.7   Yes   0
172.16.48.133  10.36.20.1     239.254.1.8   Yes   0
172.16.48.133  10.36.20.1     239.254.1.9   Yes   0
```

Table 5: Parameters in the output from show ip msdp sa-cache

PLATFORM	RECOMMENDED MAXIMUM MSDP PEERS
Source-Active advertisement expiry (secs)	The number of seconds until the RP will advertise its sources by sending out SA messages.
RP Address	The RP address of the cache entry.
Source Address	The source address of the cache entry.
Group Address	The group address of the cache entry.
Local	Whether the entry is local.
Expiry (secs)	The number of seconds until the entry expires.

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