CHAPTER 47

Configuring MSDP

This chapter describes how to configure the Multicast Source Discovery Protocol (MSDP) on the Catalyst 3750-E or 3560-E switch. The MSDP connects multiple Protocol-Independent Multicast sparse-mode (PIM-SM) domains.

MSDP is not fully supported in this software release because of a lack of support for Multicast Border Gateway Protocol (MBGP), which works closely with MSDP. However, it is possible to create default peers that MSDP can operate with if MBGP is not running.

To use this feature, the switch or stack master must be running the IP services feature set. Unless otherwise noted, the term *switch*

Note For complete syntax and usage information for the commands used in this chapter, see the *Cisco IOS IP Command Reference, Volume 3 of 3: Multicast, Release 12.2*

This chapter consists of these sections:

Understanding MSDP

MSDP allows multicast sources for a group to be known to all rendezvous points (RPs) in different domains. Each PIM-SM domain uses its own RPs and does not depend on RPs in other domains. An RP runs MSDP over the Transmission Control Protocol (TCP) to discover multicast sources in other domains.

An RP in a PIM-SM domain has an MSDP peering relationship with MSDP-enabled devices in another domain. The peering relationship occurs over a TCP connection, primarily exchanging a list of sources sending to multicast groups. The TCP connections between RPs are achieved by the underlying routing system. The receiving RP uses the source lists to establish a source path.

to a group. These announcements must originate at the domain's RP.

MSDP depends heavily on the Border Gateway Protocol (BGP) or MBGP for interdomain operation. We recommend that you run MSDP in RPs in your domain that are RPs for sources sending to global groups to be announced to the Internet.

MSDP Operation

mechanism to register a source with the RP of a domain. When MSDP is configured, this sequence occurs.

When a source sends its first multicast packet, the first-hop router (*designated router*

RPF

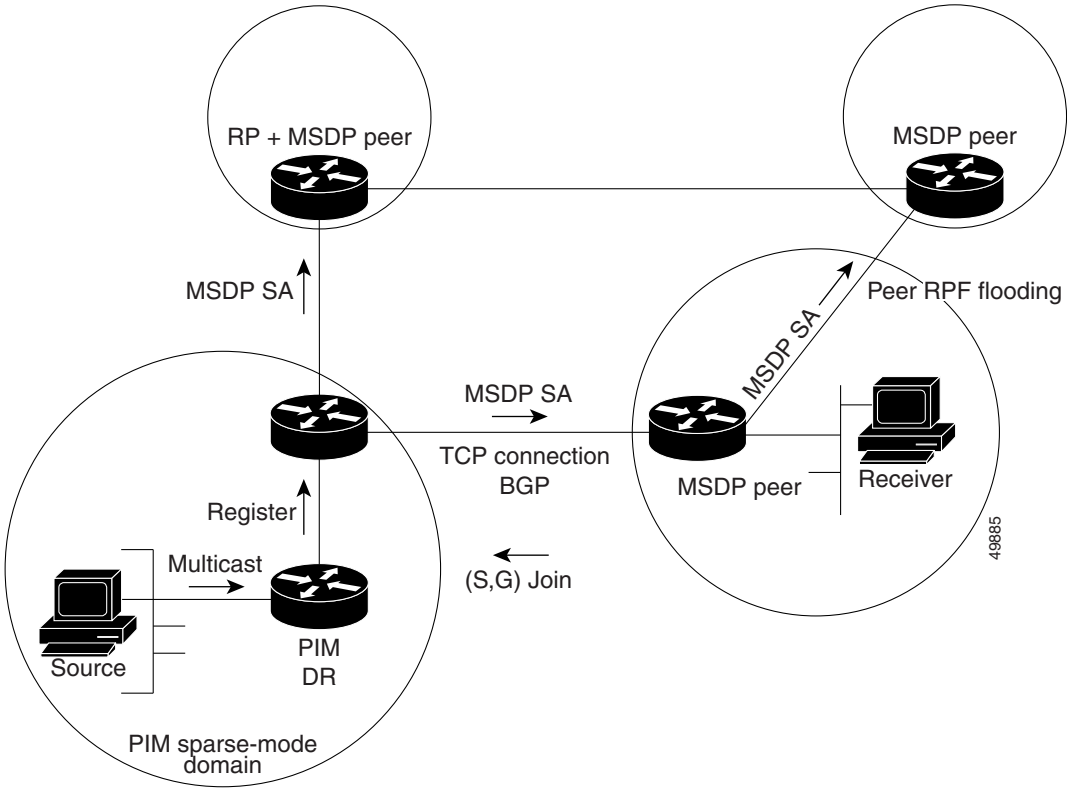
peer

"Configuring a Default MSDP Peer" section on page 47-4.

If the MSDP peer receives the same SA message from a non-RPF peer toward the originating RP, it drops the message. Otherwise, it forwards the message to all its MSDP peers.

The RP for a domain receives the SA message from an MSDP peer. If the RP has any join requests for the group the SA message describes and if the (*,G) entry exists with a nonempty outgoing interface list, the domain is interested in the group, and the RP triggers an (S,G) join toward the source. After the (S,G) join reaches the source's DR, a branch of the source tree has been built from the source to the RP in the remote domain. Multicast traffic can now flow from the source across the source tree to the RP and then down the shared tree in the remote domain to the receiver.

Figure 47-1 MSDP Running Between RP Peers



MSDP Benefits

- It breaks up the shared multicast distribution tree. You can make the shared tree local to your domain. Your local members join the local tree, and join messages for the shared tree never need to leave your domain.
- PIM sparse-mode domains can rely only on their own RPs, decreasing reliance on RPs in another domain. This increases security because you can prevent your sources from being known outside your domain.
- Domains with only receivers can receive data without globally advertising group membership.
- Global source multicast routing table state is not required, saving memory.

Configuring MSDP

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- , page 47-8 (optional)
- Controlling Source Information that Your Switch Originates, page 47-8 (optional)
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Controlling Source Information that Your Switch Receives, page 47-14 (optional)

Configuring an MSDP Mesh Group, page 47-16 (optional)

Shutting Down an MSDP Peer, page 47-16 (optional)

Including a Bordering PIM Dense-Mode Region in MSDP, page 47-17 (optional)

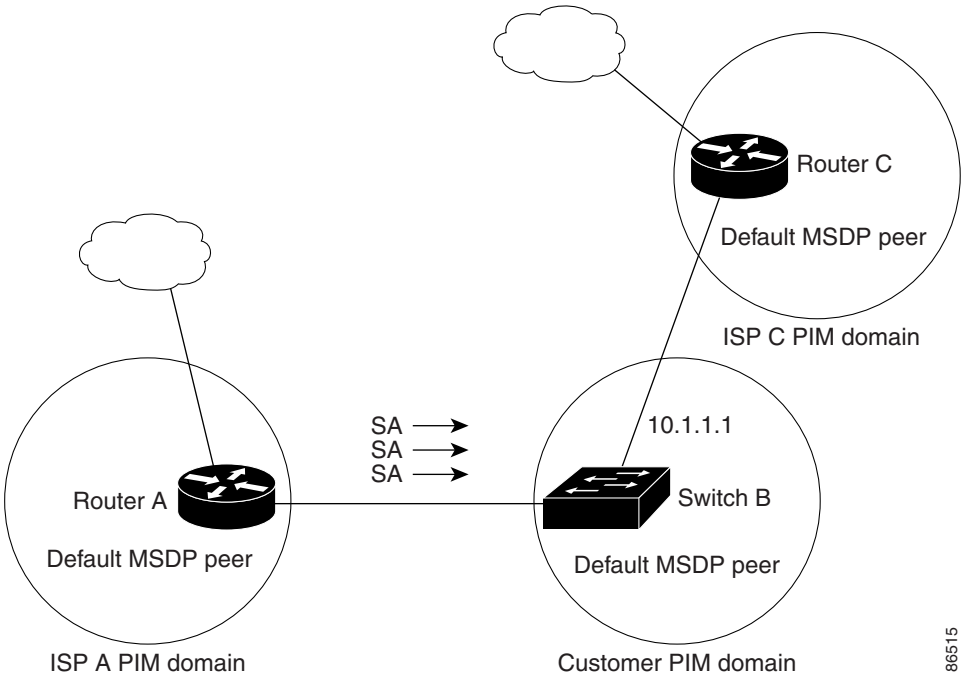
Configuring an Originating Address other than the RP Address, page 47-18 (optional)

Default MSDP Configuration

Configuring a Default MSDP Peer

ip msdp peer
ip msdp default-peer

Figure 47-2 Default MSDP Peer Network



Beginning in privileged EXEC mode, follow these steps to specify a default MSDP peer. This procedure is required.

	Command	Purpose
Step 1	**configure terminal**	
Step 2	**ip msdp default-peer** *ip-address* | [**prefix-list**]	Define a default peer from which to accept all MSDP SA messages. For *ip-address* | *name*, enter the IP address or Domain Name System (DNS) server name of the MSDP default peer. (Optional) For , enter the list name that specifies the peer to be the default peer only for the listed prefixes. You can have multiple active default peers when you have a prefix list associated with each. When you enter multiple commands with the 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 enter multiple commands without the keyword, a single active peer accepts all SA messages. If that peer fails, the next configured default peer accepts all SA messages. This syntax is typically used at a stub site.

	Command	Purpose
Step 3	**seq** *number* {	**deny**} *network length*	*string* *number,* *network length*
Step 4	*text*	**show**
Step 5	**end**	
Step 6		Verify your entries.
Step 7		

```
Router(config)# ip msdp default-peer 10.1.1.1
                ip msdp default-peer 10.1.1.1 prefix-list site-a
                ip prefix-list site-b permit 10.0.0.0/1


                ip msdp default-peer 10.1.1.1 prefix-list site-a
                ip prefix-list site-b permit 10.0.0.0/1
```

Caching Source-Active State

By default, the switch does not cache source/group pairs from received SA messages. When the switch forwards the MSDP SA information, it does not store it in memory. Therefore, if a member joins a group soon after a SA message is received by the local RP, that member needs to wait until the next SA message to hear about the source. This delay is known as join latency.

If you want to sacrifice some memory in exchange for reducing the latency of the source information, you can configure the switch to cache SA messages.

Note

```
Switch(config)# ip msdp cache-sa-state 100
                access-list 100 permit ip 171.69.0.0 0.0.255.255 224.2.0.0 0.0.255.255
```

Requesting Source Information from an MSDP Peer

Local RPs can send SA requests and get immediate responses for all active sources for a given group. By default, the switch does not send any SA request messages to its MSDP peers when a new member joins a group and wants to receive multicast traffic. The new member waits to receive the next periodic SA message.

If you want a new member of a group to learn the active multicast sources in a connected PIM sparse-mode domain that are sending to a group, configure the switch to send SA request messages to the specified MSDP peer when a new member joins a group. The peer replies with the information in its SA cache. If the peer does not have a cache configured, this command has no result. Configuring this feature reduces join latency but sacrifices memory.

Beginning in privileged EXEC mode, follow these steps to configure the switch to send SA request messages to the MSDP peer when a new member joins a group and wants to receive multicast traffic. This procedure is optional.

	Command	Purpose
Step 1		
Step 2		
Step 3		
Step 4		
Step 5		

To return to the default setting, use the { | } global configuration command.

This example shows how to configure the switch to send SA request messages to the MSDP peer at 171.69.1.1:

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

Controlling Source Information that Your Switch Originates

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Redistributing Sources

A flag

	Command	Purpose
Step 1		
Step 2	**ip msdp redistribute list** **asn** **route-map**	**list** **asn** **ip as-path access-list** **route-map** **ip as-path access-list**

Filtering Source-Active Request Messages

	Command	Purpose
Step 1		Enter global configuration mode.
Step 2	|	Filter all SA request messages from the specified MSDP peer. or Filter SA request messages from the specified MSDP peer for groups that pass the standard access list. The access list describes a multicast group address. The range for the access-list-number is 1 to 99.
	or { | }	
Step 3	{ | } [ ]	Create an IP standard access list, repeating the command as many times as necessary. • For , the range is 1 to 99. • The keyword denies access if the conditions are matched. The keyword permits access if the conditions are matched. • For , enter the number of the network or host from which the packet is being sent. • (Optional) For , enter the wildcard bits in dotted decimal notation to be applied to the source. Place ones in the bit positions that you want to ignore. Recall that the access list is always terminated by an implicit deny statement for everything.
Step 4		Return to privileged EXEC mode.
Step 5		Verify your entries.
Step 6		(Optional) Save your entries in the configuration file.

accepted; all others are ignored.

Controlling Source Information that Your Switch Forwards

Using a Filter

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	Command	Purpose
Step 1		
Step 2		


```
ip msdp peer switch.cisco.com connect-source gigabitethernet1/0/1
ip msdp sa-filter out switch.cisco.com list 100
access-list 100 permit ip 171.69.0.0 0.0.255.255 224.20 0 0.0.255.255
```

Using TTL to Limit the Multicast Data Sent in SA Messages

	Command	Purpose
Step 1		
Step 2		• •
Step 3		
Step 4		
Step 5		

Controlling Source Information that Your Switch Receives

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	Command	Purpose
Step 1		
Step 2		
Step 3		• • • • • • •
Step 4		
Step 5		
Step 6		

Configuring an MSDP Mesh Group

	Command	Purpose
Step 1		
Step 2		• •
Step 3		
Step 4		
Step 5		
Step 6		

Shutting Down an MSDP Peer

	Command	Purpose
Step 1		
Step 2		
Step 3		
Step 4		
Step 5		

Including a Bordering PIM Dense-Mode Region in MSDP

Note

	Command	Purpose
Step 1		
Step 2		
Step 3		
Step 4		

	Command	Purpose
Step 5		
Step 6		

Configuring an Originating Address other than the RP Address

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	Command	Purpose
Step 1		
Step 2		
Step 3		
Step 4		
Step 5		

Table 47-1 Commands for Monitoring and Maintaining MSDP

autonomous-system-number	
peer-address name	
group-address source-address group-name source-name autonomous-system-number	

Table 47-2 Commands for Clearing MSDP Connections, Statistics, or SA Cache Entries
