



## BFD Support for Multicast (PIM)

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This module contains information for enabling the Bidirectional Forwarding Detection (BFD) detection protocol on Protocol Independent Multicast (PIM) interfaces in your IP v4 and IPv6 network. Enabling PIM BFD enables PIM to use BFD's quicker adjacent system failure detection and avoid the slower query-interval in its own detection mechanisms.

- [Restrictions for BFD Support for Multicast \(PIM\), page 1](#)
- [Information About BFD Support for Multicast \(PIM\), page 1](#)
- [How to Configure BFD Support for Multicast \(PIM\), page 2](#)
- [Configuration Examples for BFD Support for Multicast \(PIM\), page 4](#)
- [Additional References for BFD Support for Multicast \(PIM\), page 4](#)
- [Feature Information for BFD Support for Multicast \(PIM\), page 4](#)

### Restrictions for BFD Support for Multicast (PIM)

- This feature is not supported for Multicast VPN (MVPN).
- This feature is supported only on interfaces on which both PIM and BFD are supported.

### Information About BFD Support for Multicast (PIM)

#### PIM BFD

Bidirectional Forwarding Detection (BFD) is a detection protocol designed to provide fast forwarding path failure detection times for all media types, encapsulations, topologies, and routing protocols and independent of the higher layer protocols. In addition to fast forwarding path failure detection, BFD provides a consistent failure detection method for network administrators. Because the network administrator can use BFD to detect forwarding path failures at a uniform rate, rather than the variable rates for different routing protocol hello mechanisms, network profiling and planning is easier and reconvergence time is consistent and predictable.

Protocol Independent Multicast (PIM) uses a hello mechanism for discovering new neighbors and for detecting failures between adjacent nodes. The minimum failure detection time in PIM is 3 times the PIM Query-Interval. To enable faster failure detection, the rate at which a PIM Hello message is transmitted on an interface is configurable. However, lower intervals increase the load on the protocol and can increase CPU and memory utilization and cause a system-wide negative impact on performance. Lower intervals can also cause PIM neighbors to expire frequently as the neighbor expiry can occur before the hello messages received from those neighbors are processed.

The BFD Support for Multicast (PIM) feature, also known as PIM BFD, registers PIM as a client of BFD. PIM can then utilize BFD to initiate a session with an adjacent PIM node to support BFD's fast adjacency failure detection in the protocol layer. PIM registers just once for both PIM and IPv6 PIM.

At PIMs request (as a BFD client), BFD establishes and maintains a session with an adjacent node for maintaining liveness and detecting forwarding path failure to the adjacent node. PIM hellos will continue to be exchanged between the neighbors even after BFD establishes and maintains a BFD session with the neighbor. The behavior of the PIM hello mechanism is not altered due to the introduction of this feature.

Although PIM depends on the Interior Gateway Protocol (IGP) and BFD is supported in IGP, PIM BFD is independent of IGP's BFD.

# How to Configure BFD Support for Multicast (PIM)

## Enabling BFD PIM on an Interface

### Before You Begin

- For IPv4 networks, IP multicast must be enabled and Protocol Independent Multicast (PIM) must be configured on the interface. For information, see the “Configuring Basic IP Multicast in IPv4 Networks” module of the *IP Multicast: PIM Configuration Guide*.
- For IPv6 networks, IPv6 multicast must be enabled and Protocol Independent Multicast (PIM) must be configured on the interface. For information, see the *IP Multicast: PIM Configuration Guide*.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interfacetype number**
4. **bfd interval milliseconds min\_rx milliseconds multiplier interval-multiplier**
5. Use one of the following:
  - **ip pim bfd**
  - **ipv6 pim bfd**
6. Repeat the preceding steps for each interface to be enabled for BFD PIM.
7. **end**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>interface</b> <i>number</i>  <b>Example:</b> Device(config)# interface fastethernet 1/6	Enters interface configuration mode for the specified interface.
<b>Step 4</b>	<b>bfd interval</b> <i>milliseconds</i> <b>min_rx</b> <i>milliseconds</i> <b>multiplier</b> <i>interval-multiplier</i>  <b>Example:</b> Device(config-if)# bfd interval 500 min_rx 500 multiplier 5	Enables BFD on the interface.
<b>Step 5</b>	Use one of the following: <ul style="list-style-type: none"> <li>• <b>ip pim bfd</b></li> <li>• <b>ipv6 pim bfd</b></li> </ul> <b>Example:</b> Device(config-if)# ip pim bfd Device(config-if)# ipv6 pim bfd	Enables PIM BFD on the interface.
<b>Step 6</b>	Repeat the preceding steps for each interface to be enabled for BFD PIM.	
<b>Step 7</b>	<b>end</b>  <b>Example:</b> Device(config-if)# end	Exits to privileged EXEC mode .

# Configuration Examples for BFD Support for Multicast (PIM)

## Additional References for BFD Support for Multicast (PIM)

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
IP multicast commands	<a href="#">Cisco IOS IP Multicast Command Reference</a>
Bidirectional Forwarding Detection (BFD) detection protocol	<i>IP Routing BFD Configuration Guide</i>
Protocol Independent Multicast (PIM) in an IPv4 network	“Configuring Basic IP Multicast in IPv4 Networks” module of the <i>IP Multicast: PIM Configuration Guide</i>
PIM in an IPv6 network	<i>IP Multicast: PIM Configuration Guide</i>

### Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for BFD Support for Multicast (PIM)

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1: Feature Information for BFD Support for Multicast (PIM)**

Feature Name	Releases	Feature Information
BFD Support for Multicast (PIM)	Cisco IOS Release 15.4(1)T	<p>This feature enables multicast PIM to use BFD's quicker adjacent system failure detection and avoid the slower query-interval in its own detection mechanisms.</p> <p>The following commands were introduced or modified: <b>ip pim bfd</b>, <b>ipv6 pim bfd</b>, <b>show ip pim</b>, <b>show ipv6 pim interface</b>.</p>

