



## IS-IS IPv6 Client for BFD

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When Bidirectional Forwarding Detection (BFD) support is configured with Intermediate System To Intermediate System (IS-IS) as a registered protocol with BFD, IS-IS receives forwarding path detection failure messages from BFD.

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## Prerequisites for IS-IS IPv6 Client for BFD

- IS-IS must be running on all participating devices.
- The baseline parameters for BFD sessions must be configured on the interfaces that run BFD sessions to BFD neighbors.

## Restrictions for IS-IS IPv6 Client for BFD

Only one IS-IS IPv6 session is supported.

## Information About IS-IS IPv6 Client for BFD

### IS-IS BFD Topology

When BFD support is configured with IS-IS as a registered protocol with BFD, IS-IS receives forwarding path detection failure messages from BFD. BFD support for IS-IS can be configured in either router address-family configuration mode or interface configuration mode. IS-IS IPv6 can run in single-topology or in Multi-Topology (MT) mode.

IS-IS BFD supports both IPv4 and IPv6 on the same adjacency for single-topology or multi-topology mode. If BFD is enabled for both IPv4 and IPv6, IS-IS sends two BFD session creation requests to BFD. For single-topology mode, the IS-IS adjacency state can only be UP if both BFD sessions are UP. If either of the

BFD sessions is DOWN, the associated IS-IS adjacency state is also DOWN. For MT mode, the IS-IS adjacency state can be UP as long as one of topologies has a BFD session in an UP state.

## IS-IS BFD IPv6 Session Creation

IS-IS requests a BFD session for the interface and IPv6 address of the neighboring device when all of the following conditions are met:

- An IS-IS adjacency entry exists.
- The Address Family Identifier (AFI) specific peer interface address is known.
- IS-IS BFD is enabled for that AFI on an interface.
- IS-IS is enabled for that AFI on the local interface.
- If the neighboring device supports RFC 6213, BFD must be enabled for the specified Multi-Topology Identifier (MTID) or Network Layer Protocol Identifier (NLPID).

## IS-IS BFD IPv6 Session Deletion

When IS-IS BFD IPv6 is disabled on an interface, IS-IS removes related BFD sessions for IPv6 from the adjacent device. When the IS-IS adjacency entry is deleted, all BFD sessions are also deleted. IS-IS requests BFD to remove each BFD session that it has requested when any of the following events occur:

- The IS-IS instance is deleted or un-configured.
- The IS-IS adjacency entry is deleted.
- IS-IS BFD is disabled on the next hop interface for an address-family.
- The neighboring device supports RFC 6213 and indicates that it no longer supports BFD for the specified MTID or NLPID.

# How to Configure ISIS IPv6 Client for BFD

## Configuring IS-IS IPv6 Client Support for BFD on an Interface

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ipv6 address** *ipv6-address/mask*
5. **isis ipv6 bfd**
6. **end**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<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>
Step 2	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
Step 3	<b>interface <i>type number</i></b> <b>Example:</b> Device(config)# interface gigabitethernet 6/0/0	Enters interface configuration mode.
Step 4	<b>ipv6 address <i>ipv6-address/mask</i></b> <b>Example:</b> Device(config-if)# ipv6 address 19:1:1::4/64	Configures IPv6.
Step 5	<b>isis ipv6 bfd</b> <b>Example:</b> Device(config-if)# isis ipv6 bfd	Enables IPv6 BFD on a specific interface that is configured for IS-IS.
Step 6	<b>end</b> <b>Example:</b> Device(config-if)# end	Exits interface configuration mode and returns to privileged EXEC mode.

## Configuring IS-IS IPv6 Client Support for BFD on All Interfaces

## SUMMARY STEPS

1. enable
2. configure terminal
3. router isis
4. metric-style wide
5. address-family ipv6
6. multi-topology
7. bfd all-interfaces
8. end

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b>  Device> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b>  Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>router isis</b> <b>Example:</b>  Device(config)# router isis	Enables the IS-IS routing protocol and enters router configuration mode.
<b>Step 4</b>	<b>metric-style wide</b> <b>Example:</b>  Device(config-router)# metric-style wide	(Optional) Configures a device that is running IS-IS so that it generates and accepts only new-style type, length, value objects (TLVs).
<b>Step 5</b>	<b>address-family ipv6</b> <b>Example:</b>  Device(config-router)# address-family ipv6	Enters address family configuration mode for configuring IS-IS routing sessions that use standard IPv6 address prefixes.
<b>Step 6</b>	<b>multi-topology</b> <b>Example:</b>  Device(config-router-af)# multi-topology	(Optional) Enables multi-topology IS-IS for IPv6.
<b>Step 7</b>	<b>bfd all-interfaces</b> <b>Example:</b>  Device(config-router-af)# bfd all-interfaces	Enables BFD for all interfaces participating in the routing process.
<b>Step 8</b>	<b>end</b> <b>Example:</b>  Device(config-router-af)# end	Exits address family configuration mode and returns to privileged EXEC mode.

# Configuration Examples for IS-IS IPv6 Client for BFD

## Example: IS-IS IPv6 Client Support for BFD on a Single Interface

```
Device> enable
Device# configure terminal
Device(config)# interface gigabitethernet 6/0/0
Device(config-if)# ipv6 address 19:111:112::2/64
Device(config-if)# isis ipv6 bfd
Device(config-if)# end
```

```
Device> enable
Device# configure terminal
Device(config)# interface gigabitethernet 6/0
Device(config-if)# ipv6 address 19:111:112::1/64
Device(config-if)# isis ipv6 bfd
Device(config-if)# end
```

## Example: IS-IS IPv6 Client Support for BFD on All Interfaces

```
Device> enable
Device# configure terminal
Device(config)# router isis
Device(config-router)# metric-style wide
Device(config-router)# address-family ipv6
Device(config-router-af)# multi-topology
Device(config-router-af)# bfd all-interfaces
Device(config-router-af)# end
```

The following is a sample configuration where interface 0/0/7 of Router A is connected to interface 0/4/6 of router B.

### Configuration for Router A

```
bfd-template single-hop BFDM
 interval min-tx 50 min-rx 50 multiplier 3
!
interface TenGigabitEthernet0/0/7
 ipv6 address 19:1:1::1/64
 ipv6 router isis
 bfd template BFDM
 isis ipv6 bfd
!
router isis
 net 49.0001.1720.1600.1001.00
!
```

### Configuration on Router B

```
Router B
```

```
bfd-template single-hop BFDM
  interval min-tx 50 min-rx 50 multiplier 3
!
interface TenGigabitEthernet0/4/6
  ipv6 address 19:1:1::2/64
  ipv6 router isis
  bfd template BFDM
  isis ipv6 bfd
!
router isis
  net 49.0000.0000.0002.00
!
!
```