



Configuring OSPFv3 BFD

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OSPFv3 for BFD

Information About OSPFv3 for BFD

The Bidirectional Forwarding Detection (BFD) protocol supports Open Shortest Path First version 3 (OSPFv3).

How to Configure OSPFv3 for BFD

Configuring BFD Support for OSPFv3

This section describes the procedures for configuring BFD support for OSPFv3, so that OSPFv3 is a registered protocol with BFD and will receive forwarding path detection failure messages from BFD. You can either configure BFD support for OSPFv3 globally on all interfaces or configure it selectively on one or more interfaces.

There are two methods for enabling BFD support for OSPFv3:

- You can enable BFD for all of the interfaces for which OSPFv3 is routing by using the **bfd all-interfaces** command in router configuration mode. You can disable BFD support on individual interfaces using the **ipv6 ospf bfd disable** command in interface configuration mode.
- You can enable BFD for a subset of the interfaces for which OSPFv3 is routing by using the **ipv6 ospf bfd** command in interface configuration mode.



Note OSPF will only initiate BFD sessions for OSPF neighbors that are in the FULL state.

Configuring Baseline BFD Session Parameters on the Interface

Repeat this task for each interface over which you want to run BFD sessions to BFD neighbors.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **bfd interval** *milliseconds* **min_rx** *milliseconds* **multiplier** *interval-multiplier*

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface <i>type number</i> Example: Device(config)# interface GigabitEthernet 0/0/0	Specifies an interface type and number, and places the device in interface configuration mode.
Step 4	bfd interval <i>milliseconds</i> min_rx <i>milliseconds</i> multiplier <i>interval-multiplier</i> Example: Device(config-if)# bfd interval 50 min_rx 50 multiplier 5	Enables BFD on the interface.

Configuring BFD Support for OSPFv3 for All Interfaces**Before you begin**

OSPFv3 must be running on all participating devices. The baseline parameters for BFD sessions on the interfaces over which you want to run BFD sessions to BFD neighbors must be configured.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipv6 router ospf** *process-id* [**vrf** *vpn-name*]
4. **bfd all-interfaces**
5. **exit**
6. **show bfd neighbors** [**vrf** *vrf-name*] [**client** {**bgp** | **eigrp** | **isis** | **ospf** | **rsvp** | **te-frr**}] [*ip-address* | **ipv6** *ipv6-address*] [**details**]
7. **show ipv6 ospf** [*process-id*] [*area-id*] [**rate-limit**]

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	ipv6 router ospf <i>process-id</i> [vrf <i>vpn-name</i>] Example: Device(config)# ipv6 router ospf 2	Configures an OSPFv3 routing process.
Step 4	bfd all-interfaces Example: Device(config-router)# bfd all-interfaces	Enables BFD for all interfaces participating in the routing process.
Step 5	exit Example: Device(config-router)# exit	Enter this command twice to go to privileged EXEC mode.
Step 6	show bfd neighbors [vrf <i>vrf-name</i>] [client { bgp eigrp isis ospf rsvp te-frr }] [ip-address ipv6 <i>ipv6-address</i>] [details] Example: Device# show bfd neighbors detail	(Optional) Displays a line-by-line listing of existing BFD adjacencies.
Step 7	show ipv6 ospf [<i>process-id</i>] [<i>area-id</i>] [rate-limit] Example: Device# show ipv6 ospf	(Optional) Displays general information about OSPFv3 routing processes.

Configuring OSPF Support for BFD over IPv4 for One or More Interfaces

To configure BFD on one or more OSPF interfaces, perform the steps in this section.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*

4. `ip ospf bfd [disable]`
5. `end`
6. `show bfd neighbors [details]`
7. `show ip ospf`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Device> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Device#configure terminal</pre>	Enters global configuration mode.
Step 3	interface <i>type number</i> Example: <pre>Device(config)#interface fastethernet 6/0</pre>	Enters interface configuration mode.
Step 4	ip ospf bfd [disable] Example: <pre>Device(config-if)#ip ospf bfd</pre>	Enables or disables BFD on a per-interface basis for one or more interfaces associated with the OSPF routing process. <p>Note Use the disable keyword only if you enable BFD on all of the interfaces that OSPF is associated with using the bfd all-interfaces command in router configuration mode.</p>
Step 5	end Example: <pre>Device(config-if)#end</pre>	Exits interface configuration mode and returns the device to privileged EXEC mode.
Step 6	show bfd neighbors [details] Example: <pre>Device#show bfd neighbors details</pre>	(Optional) Displays information that can help verify if the BFD neighbor is active and displays the routing protocols that BFD has registered. <p>Note If hardware-offloaded BFD sessions are configured with Tx and Rx intervals that are not multiples of 50 ms, the hardware intervals are changed. However, output from the show bfd neighbors details command displays only the configured intervals, not the interval values that change.</p>

	Command or Action	Purpose
Step 7	show ip ospf Example: Device#show ip ospf	(Optional) Displays information that can help verify if BFD support for OSPF has been enabled.

Retrieving BFDv6 Information for Monitoring and Troubleshooting

SUMMARY STEPS

1. **enable**
2. **monitor event ipv6 static** [enable | disable]
3. **show ipv6 static** [ipv6-address | ipv6-prefix/prefix-length] [interface type number | recursive] [vrf vrf-name] [bfd] [detail]
4. **show ipv6 static** [ipv6-address | ipv6-prefix/prefix-length] [interface type number | recursive] [vrf vrf-name] [bfd] [detail]
5. **debug ipv6 static**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	monitor event ipv6 static [enable disable] Example: Device# monitor event ipv6 static enable	Enables the use of event trace to monitor the operation of the IPv6 static and IPv6 static BFDv6 neighbors.
Step 3	show ipv6 static [ipv6-address ipv6-prefix/prefix-length] [interface type number recursive] [vrf vrf-name] [bfd] [detail] Example: Device# show ipv6 static vrf vrf1 detail	Displays the BFDv6 status for a static route associated with a static BFDv6 neighbor.
Step 4	show ipv6 static [ipv6-address ipv6-prefix/prefix-length] [interface type number recursive] [vrf vrf-name] [bfd] [detail] Example: Device# show ipv6 static vrf vrf1 bfd	Displays static BFDv6 neighbors and associated static routes.
Step 5	debug ipv6 static Example:	Enables BFDv6 debugging.

	Command or Action	Purpose
	Device# debug ipv6 static	

Configuring BFD Support for OSPFv3

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- You can enable BFD for a subset of the interfaces for which OSPFv3 is routing by using the **ipv6 ospf bfd** command in interface configuration mode.



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Example: Displaying OSPF Interface Information about BFD

The following display shows that the OSPF interface is enabled for BFD:

```
Device# show ipv6 ospf interface

Serial10/0 is up, line protocol is up
  Link Local Address FE80::A8BB:CCFF:FE00:6500, Interface ID 42
  Area 1, Process ID 1, Instance ID 0, Router ID 10.0.0.1
  Network Type POINT_TO_POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT_TO_POINT, BFD enabled
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:07
  Index 1/1/1, flood queue length 0
  Next 0x0(0)/0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 10.1.0.1
  Suppress hello for 0 neighbor(s)
```

Additional References

Related Documents

Related Topic	Document Title
OSPFv3 for BFD	<i>Bidirectional Forwarding Detection module</i>

Standards and RFCs

Standard/RFC	Title
RFCs for IPv6	IPv6 RFCs

Feature Information for OSPFv3 for BFD

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.

Table 1: Feature Information for OSPFv3 for BFD

Releases	Feature Information
Cisco IOS XE Gibraltar 16.11.1	The feature was introduced.

