



## OSPFv3 for BFD

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The Bidirectional Forwarding Detection protocol supports OSPFv3.

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## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

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.

## 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                                                                                                            |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | <b>enable</b><br><b>Example:</b><br><pre>Device&gt; enable</pre>                                                                                                               | 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><br><b>Example:</b><br><pre>Device# configure terminal</pre>                                                                                          | Enters global configuration mode.                                                                                  |
| <b>Step 3</b> | <b>interface type number</b><br><b>Example:</b><br><pre>Device(config)# interface GigabitEthernet 0/0/0</pre>                                                                  | Specifies an interface type and number, and places the device in interface configuration mode.                     |
| <b>Step 4</b> | <b>bfd interval milliseconds min_rx milliseconds multiplier interval-multiplier</b><br><b>Example:</b><br><pre>Device(config-if)# bfd interval 50 min_rx 50 multiplier 5</pre> | 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                                                                 |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Step 1</b> | <b>enable</b><br><b>Example:</b><br>Device> enable                                                                                                                                         | Enables privileged EXEC mode.<br>• Enter your password if prompted.     |
| <b>Step 2</b> | <b>configure terminal</b><br><b>Example:</b><br>Device# configure terminal                                                                                                                 | Enters global configuration mode.                                       |
| <b>Step 3</b> | <b>ipv6 router ospf</b> <i>process-id</i> [ <i>vrf vpn-name</i> ]<br><b>Example:</b><br>Device(config)# ipv6 router ospf 2                                                                 | Configures an OSPFv3 routing process.                                   |
| <b>Step 4</b> | <b>bfd all-interfaces</b><br><b>Example:</b><br>Device(config-router)# bfd all-interfaces                                                                                                  | Enables BFD for all interfaces participating in the routing process.    |
| <b>Step 5</b> | <b>exit</b><br><b>Example:</b><br>Device(config-router)# exit                                                                                                                              | Enter this command twice to go to privileged EXEC mode.                 |
| <b>Step 6</b> | <b>show bfd neighbors</b> [ <i>vrf vrf-name</i> ] [ <i>client {bgp   eigrp   isis   ospf   rsvp   te-frr}</i> ] [ <i>ip-address</i>   <b>ipv6</b> <i>ipv6-address</i> ] [ <i>details</i> ] | (Optional) Displays a line-by-line listing of existing BFD adjacencies. |

|               | Command or Action                                                                                                                         | Purpose                                                                 |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|               | <b>Example:</b><br><br>Device# show bfd neighbors detail                                                                                  |                                                                         |
| <b>Step 7</b> | <b>show ipv6 ospf</b> [ <i>process-id</i> ] [ <i>area-id</i> ] [ <i>rate-limit</i> ]<br><br><b>Example:</b><br><br>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                                                                                                                                                                                                                                                                                                                        |
|---------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | <b>enable</b><br><br><b>Example:</b><br><br>Device> enable                                                   | Enables privileged EXEC mode.<br><br><ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>                                                                                                                                                                                                      |
| <b>Step 2</b> | <b>configure terminal</b><br><br><b>Example:</b><br><br>Device# configure terminal                           | Enters global configuration mode.                                                                                                                                                                                                                                                                                              |
| <b>Step 3</b> | <b>interface</b> <i>type number</i><br><br><b>Example:</b><br><br>Device(config)# interface fastethernet 6/0 | Enters interface configuration mode.                                                                                                                                                                                                                                                                                           |
| <b>Step 4</b> | <b>ip ospf bfd</b> [ <i>disable</i> ]<br><br><b>Example:</b><br><br>Device(config-if)# ip ospf bfd           | Enables or disables BFD on a per-interface basis for one or more interfaces associated with the OSPF routing process.<br><br><b>Note</b> Use the <b>disable</b> keyword only if you enable BFD on all of the interfaces that OSPF is associated with using the <b>bfd all-interfaces</b> command in router configuration mode. |

|               | Command or Action                                                                                       | Purpose                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 5</b> | <b>end</b><br><b>Example:</b><br><pre>Device(config-if)# end</pre>                                      | Exits interface configuration mode and returns the device to privileged EXEC mode.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Step 6</b> | <b>show bfd neighbors [details]</b><br><b>Example:</b><br><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.<br><br><b>Note</b> 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 <b>show bfd neighbors details</b> command displays only the configured intervals, not the interval values that change. |
| <b>Step 7</b> | <b>show ip ospf</b><br><b>Example:</b><br><pre>Device# show ip ospf</pre>                               | (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                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | <b>enable</b><br><b>Example:</b><br><pre>Device&gt; enable</pre>                                                              | Enables privileged EXEC mode.<br><br><ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul> |
| <b>Step 2</b> | <b>monitor event ipv6 static [enable   disable]</b><br><b>Example:</b><br><pre>Device# monitor event ipv6 static enable</pre> | Enables the use of event trace to monitor the operation of the IPv6 static and IPv6 static BFDv6 neighbors.               |

|               | Command or Action                                                                                                                                                                                                                                                            | Purpose                                                                               |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Step 3</b> | <b>show ipv6 static</b> [ <i>ipv6-address</i>   <i>ipv6-prefix/prefix-length</i> ]<br>[ <i>interface type number</i>   <b>recursive</b> ] [ <b>vrf vrf-name</b> ] [ <b>bfd</b> ]<br>[ <b>detail</b> ]<br><br><b>Example:</b><br><br>Device# show ipv6 static vrf vrf1 detail | Displays the BFDv6 status for a static route associated with a static BFDv6 neighbor. |
| <b>Step 4</b> | <b>show ipv6 static</b> [ <i>ipv6-address</i>   <i>ipv6-prefix/prefix-length</i> ]<br>[ <i>interface type number</i>   <b>recursive</b> ] [ <b>vrf vrf-name</b> ] [ <b>bfd</b> ]<br>[ <b>detail</b> ]<br><br><b>Example:</b><br><br>Device# show ipv6 static vrf vrf1 bfd    | Displays static BFDv6 neighbors and associated static routes.                         |
| <b>Step 5</b> | <b>debug ipv6 static</b><br><br><b>Example:</b><br><br>Device# debug ipv6 static                                                                                                                                                                                             | Enables BFDv6 debugging.                                                              |

## Configuration Examples for OSPFv3 for BFD

### 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                                      |
|----------------------------------|-----------------------------------------------------|
| IPv6 addressing and connectivity | <i>Cisco IOS IPv6 Configuration Guide</i>           |
| Cisco IOS commands               | <i>Cisco IOS Master Commands List, All Releases</i> |
| IPv6 commands                    | <i>Cisco IOS IPv6 Command Reference</i>             |
| Cisco IOS IPv6 features          | <i>Cisco IOS IPv6 Feature Mapping</i>               |
| OSPFv3 for BFD                   | “Bidirectional Forwarding Detection” module         |

## Standards and RFCs

| Standard/RFC  | Title     |
|---------------|-----------|
| RFCs for IPv6 | IPv6 RFCs |

## MIBs

| MIB | MIBs Link                                                                                                                                                                                                                  |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:<br><br><a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a> |

## 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 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.

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**Table 1: Feature Information for OSPFv3 for BFD**

| Feature Name   | Releases                                         | Feature Information                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OSPFv3 for BFD | 15.1(2)T<br>12.2(33)SRE<br>15.0(1)SY<br>15.2(1)E | BFD supports the dynamic routing protocol OSPFv3.<br><br>The following commands were introduced or modified: <b>bfd</b> , <b>bfd all-interfaces</b> , <b>debug bfd</b> , <b>ipv6 router ospf</b> , <b>show bfd neighbors</b> , <b>show ipv6 ospf</b> , <b>show ipv6 ospf interface</b> , <b>show ospfv3</b> , <b>show ospfv3 interface</b> . |