Configuring Bidirectional Forwarding Detection

This chapter describes how to configure Bidirectional Forwarding Detection (BFD).

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Information About BFD

BFD is a detection protocol designed to provide fast forwarding-path failure detection times for media types, encapsulations, topologies, and routing protocols. You can use BFD to detect forwarding path failures at a uniform rate, rather than the variable rates for different protocol hello mechanisms. BFD makes network profiling and planning easier and reconvergence time consistent and predictable.

BFD provides subsecond failure detection between two adjacent devices.

Asynchronous Mode

Cisco NX-OS supports the BFD asynchronous mode, which sends BFD control packets between two adjacent devices to activate and maintain BFD neighbor sessions between the devices. You configure BFD on both devices (or BFD neighbors). Once BFD has been enabled on the appropriate protocols, Cisco NX-OS creates a BFD session, negotiates BFD session parameters, and begins to send BFD control packets to each BFD neighbor at the negotiated interval. The BFD session parameters include the following:

- Desired minimum transmit interval—The interval at which this device wants to send BFD hello messages.
- Required minimum receive interval—The minimum interval at which this device can accept BFD hello messages from another BFD device.
- Detect multiplier—The number of missing BFD hello messages from another BFD device before this local device detects a fault in the forwarding path.

BFD Detection of Failures

Once a BFD session has been established and timer negotiations are complete, BFD neighbors send BFD control packets that act in the same manner as an IGP hello protocol to detect liveliness, except at a more accelerated rate. BFD detects a failure, but the protocol must take action to bypass a failed peer.

BFD sends a failure detection notice to the BFD-enabled protocols when it detects a failure in the forwarding path. The local device can then initiate the protocol recalculation process and reduce the overall network convergence time.

When a failure occurs in the network, the following occurs:

1. 1. The BFD neighbor session with the BFD neighbor router is torn down.
2. 2. BFD notifies the local BFD process that the BFD neighbor is no longer reachable.
3. 3. The local BFD process tears down the BFD neighbor relationship.
4. 4. If an alternative path is available, the routers immediately start converging on it.

Note The BFD failure detection occurs in less than a second.

BFD Echo Function

The BFD echo function sends echo packets from the forwarding engine to the remote BFD neighbor. The BFD neighbor forwards the echo packet back along the same path in order to perform detection; the BFD neighbor does not participate in the actual forwarding of the echo packets. The echo function and the forwarding engine are responsible for the detection process. BFD can use the slow timer to slow down the asynchronous session when the echo function is enabled and reduce the number of BFD control packets that are sent between two BFD neighbors. Also, the forwarding engine tests the forwarding path on the remote (neighbor) system without involving the remote system, so there is less interpacket delay variability and faster failure detection times.

The echo function is asymmetrical when both BFD neighbors are running echo function.

Security

Cisco NX-OS uses the packet Time to Live (TTL) value to verify that the BFD packets came from an adjacent BFD peer. For all asynchronous and echo request packets, the BFD neighbor sets the TTL value to 255 and the local BFD process verifies the TTL value as 255 before processing the incoming packet. For the echo response packet, BFD sets the TTL value to 254.

Virtualization Support

BFD supports virtual routing and forwarding instances (VRFs).

Prerequisites for BFD

BFD has the following prerequisites:

- You must enable the BFD feature (see the Enabling the BFD Feature section).
- For any client protocols that you want to enable BFD on, you enable BFD in that client protocol.
- Disable Internet Control Message Protocol (ICMP) redirect messages on a BFD-enabled interfaces.
- See other detailed prerequisites that are listed with the configuration tasks.
- Beginning with Cisco NX-OS Release 6.0(2)A4(1), BFD for BGP and PIM are supported.

Guidelines and Limitations

BFD has the following configuration guidelines and limitations:

- BFD supports BFD version 1.
- BFD supports IPv4, BGPv4, PIM and static routes.
- BFD supports single-hop BFD.
- BFD for BGP supports single-hop eBGP and iBGP with an update source.
- BFD supports the following Layer 3 interfaces—physical interfaces, port channels, subinterfaces, and VLAN interfaces (SVI).
- BFD does not support authentication for BFD or per-link BFD sessions on a port channel.
- BFD depends on a Layer 3 adjacency information to discover topology changes, including Layer 2 topology changes. A BFD session on a VLAN interface (SVI) may not be up after the convergence of the Layer 2 topology if there is no Layer 3 adjacency information available.
- Port channel configuration limitations:

– For Layer 3 port channels used by BFD, you must enable the Link Aggregation Control Protocol (LACP) on the port channel.

– For Layer 2 port channels used by SVI sessions, you must enable LACP on the port channel.

- SVI limitations:
  - An ASIC reset causes traffic disruption for other ports and it can cause the SVI sessions on the other ports to flap. For example, if the carrier interface is a virtual port channel (vPC), BFD is not supported over the SVI interface and it could cause a trigger for an ASIC reset. When a BFD session is over SVI using virtual port channel (vPC) Peer-Link, the BFD echo function is not supported. You must disable the BFD echo function for all sessions over SVI between vPC peer nodes.

    An SVI on the Cisco Nexus series switches should not be configured to establish a BFD neighbor adjacency with a device connected to it via a vPC. This is because the BFD keepalives from the neighbor, if sent over the vPC member link connected to the vPC peer-switch, do not reach this SVI causing the BFD adjacency to fail.

- When you change the topology (for example, add or delete a link into a VLAN, delete a member from a Layer 2 port channel, and so on), the SVI session could be affected. It may go down first and then come up after the topology discovery is finished.
- BFD over FEX HIF interfaces is not supported.
- When a BFD session is over SVI using virtual port-channel (vPC) Peer-Link (either BCM or GEM based ports), the BFD echo function is not supported. You must disable the BFD echo function for all sessions over SVI between vPC peer nodes using the no bfd echo command at the SVI configuration level.

Tip If you do not want the SVI sessions to flap and you need to change the topology, you can disable the BFD feature before making the changes and reenable BFD after the changes have been made. You can also configure the BFD timer to be a large value (for example, 5 seconds), and change it back to a fast timer after the above events complete.

- Cisco NX-OS does not distribute the BFD operation to compatible modules to offload the CPU for BFD packet processing.
- BFD does not support stateless restarts and in-service software upgrades (ISSUs).
- If you want to enable BFD for a peer reachable through a port channel, you must configure LACP on the port channel.
- Cisco Nexus 3548 cannot be an intermediate switch to forward BFD echo packets.
- Port channel configuration notes:
  - When the BFD per-link mode is configured, the BFD echo function is not supported. You must disable the BFD echo function using the **no bfd echo** command before configuring the **bfd per-link** command.
  - Before configuring BFD per-link, make sure there is no BFD session running on the port-channel. If there is any BFD session running already, remove it and then proceed with bfd per-link configuration.
  - Configuring BFD per-link with link-local is not supported.
  - The BFD per-link is supported on Cisco Nexus 3548 Series platform switches.
  - Beginning with Cisco NX-OS Release 9.3(7), BFD is supported on unnumbered interfaces.

Note BFD over Unnumbered Switched Virtual Interfaces (SVIs) are not supported.

Downgrade compatibility for BFD on unnumbered interface support cannot be verified using **show incompatibility nxos bootflash:filename** command. The compatibility will be checked during **install all** command.

Default Settings

Table below lists the default settings for BFD parameters.

Table 1: Default BFD Parameters

Parameters	Default
BFD feature	Disabled
Required minimum receive interval	250 milliseconds
Desired minimum transmit interval	250 milliseconds
Detect multiplier	3
Echo function	Enabled
Mode	Asynchronous
Port channel	Logical mode (one session per source-destination pair address)
Slow timer	2000 milliseconds
Subinterface optimization	Disabled

Configuring BFD

This section includes the following topics:

Configuration Hierarchy

You can configure BFD at the global level, VRF level, at the interface or port channel level, or at the subinterface level (for physical interfaces and port channels). The VRF configuration overrides global configuration. The interface or port channel configuration overrides VRF or global configuration. On supported interfaces, the subinterface-level configuration overrides the interface or port channel configuration unless subinterface optimization is enabled. See the Optimizing BFD on Subinterfaces section for more information.

For physical ports that are members of a port channel, the member port inherits the primary port channel BFD configuration. The member port subinterfaces can override the primary port channel BFD configuration, unless subinterface optimization is enabled.

Task Flow for Configuring BFD

Follow these steps to configure BFD:

Procedure

Step 1 Enabling the BFD Feature.
Step 2 Configuring Global BFD Parameters or Configuring BFD on an Interface.
Step 3 Configuring BFD on BGP.

Enabling the BFD Feature

You must enable the BFD feature before you can configure BFD on an interface and protocol.

SUMMARY STEPS

1. **configure terminal**
2. **feature bfd**
3. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**feature bfd** **Example:** `switch(config)# feature bfd`	Enables the BFD feature.
Step 3	(Optional) **copy running-config startup-config** **Example:** `switch(config)# copy running-config startup-config`	Saves this configuration change.

Configuring Global BFD Parameters

You can configure the BFD session parameters for all BFD sessions on the device. The BFD session parameters are negotiated between the BFD peers in a three-way handshake.

See the Configuring BFD on an Interface section to override these global session parameters on an interface.

Before you begin

Enable the BFD feature. See the Enabling the BFD Feature section.

SUMMARY STEPS

1. **configure terminal**
2. **bfd interval** *mintx* **min_rx** *msec* **multiplier** *value*
3. **bfd slow-timer** [*interval*]
4. **exit**
5. (Optional) **show running-config bfd**
6. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**bfd interval** *mintx* **min_rx** *msec* **multiplier** *value* **Example:** `switch(config)# bfd interval 250 min_rx 250 multiplier 3`	Configures the BFD session parameters for all BFD sessions on the device. You can override these values by configuring the BFD session parameters on an interface. The *mintx* and *msec* range is from 250 to 999 milliseconds and the default is 250. The multiplier range is from 3 to 50. The multiplier default is 3. To return to the default settings, use the **no bfd interval** command.
Step 3	**bfd slow-timer** [*interval*] **Example:** `switch(config)# bfd slow-timer 2000`	Configures the slow timer. This value determines how fast BFD starts up a new session and is used to slow down the asynchrounous sessions when the BFD echo function is enabled. The range is from 1000 to 30000 milliseconds. The default is 2000. To return to the default settings, use the no bfd slow-timer command.

Step 4	**exit**
	Example:
	`switch(config)# exit`
	`switch#`
		Returns to EXEC mode.

Step 5	(Optional) **show running-config bfd** **Example:** `switch# show running-config bfd`	Displays the BFD running configuration.

	Command or Action	Purpose
Step 6	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring BFD on an Interface

Enable the BFD feature. See the Enabling the BFD Feature section.

Before you begin

You can configure the BFD session parameters for all BFD sessions on an interface. The BFD session parameters are negotiated between the BFD peers in a three-way handshake.

This configuration overrides the global session parameters for the configured interface.

SUMMARY STEPS

1. **configure terminal**
2. **interface** *int-if*
3. **bfd interval** *mintx* **min_rx** *msec* **multiplier** *value*
4. **exit**
5. **exit**
6. (Optional) **show running-config bfd**
7. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**interface** *int-if*
	Example:
	`switch(config)# interface ethernet 2/1`
	`switch(config-if)#`
		Enters interface configuration mode. Use the **?** keyword to display the supported interfaces.

Step 3	**bfd interval** *mintx* **min_rx** *msec* **multiplier** *value* **Example:** `switch(config-if)# bfd interval 250 min_rx 250 multiplier 3`	Configures the BFD session parameters for all BFD sessions on the interface. This command overrides the global BFD session parameters. The *mintx* and *msec* range is from 250 to 999 milliseconds and the default is 250. The multiplier range is from 3 to 50. The multiplier default is 3.

	Command or Action	Purpose
		To return to the default settings, use the **no bfd interval** command.

Step 4	**exit**
	Example:
	`switch(config-if)# exit`
	`switch (config)#`
		Exits interface configuration mode.

Step 5	**exit**
	Example:
	`switch (config)# exit`
	`switch#`
		Exits configuration mode and returns to EXEC mode.

Step 6	(Optional) **show running-config bfd** **Example:** `switch# show running-config bfd`	Displays the BFD running configuration.
Step 7	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring BFD on a Port Channel

You can configure the BFD session parameters for all BFD sessions on a port channel. For example, if the BFD session for one link on a port channel is up, BFD informs client protocols, such as BGP, that the port channel is up. The BFD session parameters are negotiated between the BFD peers in a three-way handshake.

This configuration overrides the global session parameters for the configured port channel. The member ports of the port channel inherit the port channel BFD session parameters, unless you configure subinterface-level BFD parameters on a member port. In that case, the member port subinterface uses the subinterface BFD configuration if subinterface optimization is not enabled. See the Optimizing BFD on Subinterfaces section for more information.

Before you begin

Ensure that you enable LACP on the port channel before you enable BFD.

Enable the BFD feature. See the Enabling the BFD Feature section.

SUMMARY STEPS

1. **configure terminal**
2. **interface port-channel** *number*
3. **bfd per-link**
4. (Optional) **bfd interval** *mintx* **min_rx** *msec* **multiplier** *value*
5. **exit**
6. **exit**
7. (Optional) **show running-config bfd**

8. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**interface port-channel** *number*
	Example:
	`switch(config)# interface port-channel 2`
	`switch(config-if)#`
		Enters port channel configuration mode. Use the **?** keyword to display the supported number range.

Step 3	**bfd per-link** **Example:** `switch(config-if)# bfd per-link`	Configures the BFD sessions for each link in the port channel.
Step 4	(Optional) **bfd interval** *mintx* **min_rx** *msec* **multiplier** *value* **Example:** `switch(config-if)# bfd interval 250 min_rx 250 multiplier 3`	Configures the BFD session parameters for all BFD sessions on the interface. This command overrides the global BFD session parameters. The *mintx* and *msec* range is from 250 to 999 milliseconds and the default is 250. The multiplier range is from 3 to 50. The multiplier default is 3. To return to the default settings, use the **no bfd interval** command.

Step 5	**exit**
	Example:
	`switch(config-if)# exit`
	`switch (config)#`
		Exits interface configuration mode.

Step 6	**exit**
	Example:
	`switch (config)# exit`
	`switch#`
		Exits configuration mode and returns to EXEC mode.

Step 7	(Optional) **show running-config bfd** **Example:** `switch# show running-config bfd`	Displays the BFD running configuration.
Step 8	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring the BFD Echo Function

You can configure the BFD echo function on one or both ends of a BFD-monitored link. The echo function slows down the required minimum receive interval, based on the configured slow timer. The RequiredMinEchoRx BFD session parameter is set to zero if the echo function is disabled. The slow timer becomes the required minimum receive interval if the echo function is enabled.

Before you begin

Enable the BFD feature. See the Enabling the BFD Feature section.

Configure the BFD session parameters. See the Configuring Global BFD Parameters section or the Configuring BFD on an Interface section.

Ensure that Internet Control Message Protocol (ICMP) redirect messages are disabled on BFD-enabled interfaces. Use the **no ip redirects** command on the interface.

SUMMARY STEPS

1. **configure terminal**
2. **bfd slow-timer** *echo-interval*
3. **interface** *int-if*
4. **bfd echo**
5. **exit**
6. **exit**
7. (Optional) **show running-config bfd**
8. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**bfd slow-timer** *echo-interval* **Example:** `switch(config)# bfd slow-timer 2000`	Configures the slow timer used in the echo function. This value determines how fast BFD starts up a new session and is used to slow down the asynchrounous sessions when the BFD echo function is enabled. This value overwrites the required minimum receive interval when the echo function is enabled. The range is from 1000 to 30000 milliseconds. The default is 2000. To return to the default settings, use the no bfd slow-timer command.

	Command or Action	Purpose

Step 3	**interface** *int-if*
	Example:
	`switch(config)# interface ethernet 2/1`
	`switch(config-if)#`
		Enters interface configuration mode. Use the **?** keyword to display the supported interfaces.

Step 4	**bfd echo** **Example:** `switch(config-if)# bfd echo`	Enables the echo function. The default is enabled. To disable the echo function, use the no bfd echo command.

Step 5	**exit**
	Example:
	`switch(config-if)# exit`
	`switch (config)#`
		Exits interface configuration mode.

Step 6	**exit**
	Example:
	`switch (config)# exit`
	`switch#`
		Exits configuration mode and returns to EXEC mode.

Step 7	(Optional) **show running-config bfd** **Example:** `switch# show running-config bfd`	Displays the BFD running configuration.
Step 8	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Optimizing BFD on Subinterfaces

You can optimize BFD on subinterfaces. BFD creates sessions for all configured subinterfaces. BFD sets the subinterface with the lowest configured VLAN ID as the primary subinterface and that subinterface uses the BFD session parameters of the parent interface. The remaining subinterfaces use the slow timer. If the optimized subinterface session detects an error, BFD marks all subinterfaces on that physical interface as down.

Before you begin

Enable the BFD feature. See the Enabling the BFD Feature section.

Configure the BFD session parameters. See the Configuring Global BFD Parameters section or the Configuring BFD on an Interface section.

Ensure that these subinterfaces connect to another Cisco NX-OS device. This feature is supported on Cisco NX-OS only.

SUMMARY STEPS

1. **configure terminal**

2. **interface** *int-if*
3. **bfd optimize subinterface**
4. **exit**
5. **exit**
6. (Optional) **show running-config bfd**
7. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**interface** *int-if*
	Example:
	`switch(config)# interface ethernet 2/1`
	`switch(config-if)#`
		Enters interface configuration mode. Use the **?** keyword to display the supported interfaces.

Step 3	**bfd optimize subinterface** **Example:** `switch(config-if)# bfd optimize subinterface`	Optimizes subinterfaces on a BFD-enabled interface. The default is disabled. To disable optimized subinterfaces, use the **no bfd optimize subinterfaces** command.

Step 4	**exit**
	Example:
	`switch(config-if)# exit`
	`switch (config)#`
		Exits interface configuration mode.

Step 5	**exit**
	Example:
	`switch (config)# exit`
	`switch#`
		Exits configuration mode and returns to EXEC mode.

Step 6	(Optional) **show running-config bfd** **Example:** `switch# show running-config bfd`	Displays the BFD running configuration.
Step 7	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring BFD on BGP

You can configure BFD for the Border Gateway Protocol (BGP).

Before you begin

Enable the BFD feature. See the Enabling the BFD Feature section.

Configure the BFD session parameters. See the Configuring Global BFD Parameters section or the Configuring BFD on an Interface section.

SUMMARY STEPS

1. **configure terminal**
2. **router bgp** *as-number*
3. **neighbor** { *ip-address* } **remote-as** *as-number*
4. **bfd**
5. (Optional) **show running-config bfd**
6. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**router bgp** *as-number*
	Example:
	`switch(config)# router bgp 64496`
	`switch(config-router)#`
		Enables BGP and assigns the AS number to the local BGP speaker. The AS number can be a 16-bit integer or a 32-bit integer in the form of a higher 16-bit decimal number and a lower 16-bit decimal number in xx.xx format.

Step 3	**neighbor** { *ip-address* } **remote-as** *as-number*
	Example:
	`switch(config-router)# neighbor 209.165.201.1 remote-as 64497`
	`switch(config-router-neighbor)#`
		Configures the IPv4 and AS number for a remote BGP peer. The *ip-address* format is x.x.x.x.

Step 4	**bfd** **Example:** `switch(config-router-neighbor)# bfd`	Enables BFD for this BGP peer.
Step 5	(Optional) **show running-config bfd** **Example:** `switch# show running-config bfd`	Displays the BFD running configuration.

	Command or Action	Purpose
Step 6	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring BFD on PIM

You can configure BFD for the Protocol Independent Multicast (PIM) protocol.

Before you begin

Enable the BFD feature. See the Enabling the BFD Feature section.

Enable the PIM feature. See the Cisco Nexus 3548 Switch NX-OS Multicast Routing Configuration Guide for more information.

SUMMARY STEPS

1. **configure terminal**
2. **ip pim bfd**
3. **interface** *type slot/port*
4. (Optional) **ip pim bfd-instance** [**disable**]
5. (Optional) **show running-config pim**
6. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**ip pim bfd** **Example:** `switch(config)# ip pim bfd`	Enables BFD for PIM.

Step 3	**interface** *type slot/port*
	Example:
	`switch(config)# interface ethernet 2/1`
	`switch(config-if)#`
		Enters interface configuration mode. Use the **?** keyword to display the supported interfaces.

Step 4	(Optional) **ip pim bfd-instance** [**disable**] **Example:**	Enables or disables BFD on a PIM interface. The default is disabled.

	Command or Action	Purpose
	`switch(config-if)# ip pim bfd-instance`	
Step 5	(Optional) **show running-config pim** **Example:** `switch(config)# show running-config pim`	Displays the PIM running configuration.
Step 6	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring BFD on OSPFv2

You can configure BFD for the Open Shortest Path First Protocol (OSPFv2).

Before you begin

Enable the BFD feature.

Configure the BFD session parameters, globally or for a specific interface.

Enable the OSPFv2 feature.

SUMMARY STEPS

1. **configure terminal**
2. **router ospf** *process-id*
3. **bfd**
4. **interface** *int-if*
5. (Optional) **[no] ip ospf bfd disable**
6. (Optional) **show running-config ospf**
7. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**router ospf** *process-id*
	Example:
	`switch(config)# router ospf 64496`
	`switch(config-router)#`
		Creates a new OSPFv2 process with a configured id.

	Command or Action	Purpose
Step 3	**bfd** **Example:** `switch(config-router)# bfd`	Enables BFD for this OSPFv2 peer. The default value is disabled.

Step 4	**interface** *int-if*
	Example:
	`switch(config-router)# interface ethernet 1/2`
	`switch (config-if)#`
		Enters interface configuration mode. Use the ? keyword to display the supported interfaces.

Step 5	(Optional) **[no] ip ospf bfd disable** **Example:** `switch(config-if)# ip ospf bfd disable`	Disables BFD on a OSPFv2 interface. The default value is enabled.
Step 6	(Optional) **show running-config ospf** **Example:** `switch(config)# show running-config ospf`	Displays the OSPFv2 running configuration.
Step 7	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Configuring BFD for Static Routes

You can configure BFD for static routes on an interface. You can optionally configure BFD on a static route within a virtual routing and forwarding (VRF) instance.

Before you begin

Enable the BFD feature. See the Enabling the BFD Feature section.

SUMMARY STEPS

1. **configure terminal**
2. (Optional) **vrf context** *vrf-name*
3. **ip route** *route interface* { *nh-address* | *nh-prefix* }
4. **ip route static bfd** *interface* { *nh-address* | *nh-prefix* }
5. (Optional) **show ip route static** [**vrf** *vrf-name*]
6. (Optional) **copy running-config startup-config**

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	(Optional) **vrf context** *vrf-name*
	Example:
	`switch(config)# vrf context Red`
	`switch(config-vrf)#`
		Enters VRF configuration mode.

Step 3	**ip route** *route interface* { *nh-address* | *nh-prefix* } **Example:** `switch(config-vrf)# ip route 192.0.2.1 ethernet 2/1 192.0.2.4`	Creates a static route Use the **?** keyword to display the supported interfaces.
Step 4	**ip route static bfd** *interface* { *nh-address* | *nh-prefix* } **Example:** `switch(config-vrf)# ip route static bfd ethernet 2/1 192.0.2.4`	Enables BFD for all static routes on an interface. Use the **?** keyword to display the supported interfaces.
Step 5	(Optional) **show ip route static** [**vrf** *vrf-name*] **Example:** `switch(config-vrf)# show ip route static vrf Red`	Displays the static routes.
Step 6	(Optional) **copy running-config startup-config** **Example:** `switch# copy running-config startup-config`	Saves this configuration change.

Verifying the BFD Configuration

To display BFD configuration information, perform one of the following tasks:

Command	Purpose
show running-config bfd	Displays the running BFD configuration.
show startup-config bfd	Displays the BFD configuration that will be applied on the next system startup.

For detailed information about the fields in the output from these commands, see the Cisco Nexus 3548 Switch NX-OS Interfaces Command Reference, Release 6.x.

Monitoring BFD

Use the following commands to display BFD:

Command	Purpose
show bfd neighbors [**application** *name*] [**details**]	Displays information about BFD for a supported application, such as BGP.
show bfd neighbors [**interface** *int-if*] [**details**]	Displays information about BGP sessions on an interface.
show bfd neighbors [**dest-ip** *ip-address*] [**src-ip** *ip-address*][*details*]	Displays information about the specified BGP session on an interface.
show bfd neighbors [**vrf** *vrf-name*] [**details**]	Displays information about BFD for a VRF.

For detailed information about the fields in the output from these commands, see the Cisco Nexus 3548 Switch Command Reference.