Configuring BFD Debug Enhancement

The Bidirectional Forwarding Detection (BFD) Debug Enhancement feature enables logging of debugging information for critical BFD events, normal BFD events, and BFD packets. This feature enables BFD event traces and BFD event logs. This feature allows network engineers and operaters to easily identify and analyze issues with BFD sessions.

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. An account on Cisco.com is not required.

Prerequisites for BFD Debug Enhancement

Bidirectional Forwarding Detection (BFD) feature must be running on the device.

Restrictions for BFD Debug Enhancement

The Bidirectional Forwarding Detection (BFD) event trace logs cannot store more than 65536 elements in a BFD instance. Once the log elements reach this limit, new log entries replace the old log entries.

RSP3 do not support the Bidirectional Forwarding Detection (BFD) debug enhancement.

Information About BFD Debug Enhancement

Overview of BFD Debug Enhancement

The Bidirectional Forwarding Detection (BFD) Debug Enhancement feature enables logging of debugging information for critical BFD events, normal BFD events, and BFD packets. This feature enables BFD event traces and BFD event logs.

BFD Debug Enhancement - Event Tracer subsystem

The Event Tracer subsystem in the BFD Debug Enhancement feature helps network engineers trace BFD events. This subsystem generates debugging information that can be extracted and analyzed. You can optionally store the traced data in a file for further analysis.

BFD Debug Enhancement - Event Log Architecture

The Event Log Architecture in the BFD Debug Enhancement feature is classified into three types:

- BFD Critical—Logs debugging information about all critical BFD event traces, whenever the BFD session attains the DOWN state.
- BFD Event—Logs debugging information about all BFD events that can be logged using the **debug bfd event** command.
- BFD Packet—Logs debugging information about all BFD packets that can be logged using the **debug bfd packet** command.

How to Configure BFD Debug Enhancement

Configuring BFD Debug Enhancement

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **bfd-template single-hop** *template-name*
4. **interval min-tx** *milliseconds* **min-rx** *milliseconds* **multiplier** *multiplier-value*
5. **interface gigabitethernet** *number*
6. **bfd template** *template name*
7. **end**
8. **debug bfd event**
9. **debug bfd packet**
10. **monitor event-trace bfd event enable**
11. **monitor event-trace bfd event all enable**
12. **monitor event-trace bfd packet enable**

13. **monitor event-trace bfd packet all enable**
14. **show monitor event-trace bfd**

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	**bfd-template single-hop** *template-name* **Example:** `Router(config)# bfd-template single-hop bfdtemplate1`	Creates a single-hop BFD template and enters BFD configuration mode.
Step 4	**interval min-tx** *milliseconds* **min-rx** *milliseconds* **multiplier** *multiplier-value* **Example:** `Router(bfd-config)# interval min-tx 120 min-rx 100 multiplier 3`	Configures the transmit and receive intervals between BFD packets, and specifies the number of consecutive BFD control packets that must be missed before BFD declares that a peer is unavailable.
Step 5	**interface gigabitethernet** *number* **Example:** `Device(config)# interface gigabitethernet 0/0/0`	Specifies the Gigabit Ethernet interface and enters interface configuration mode.
Step 6	**bfd template** *template name*	Enables the BFD template.
Step 7	**end** **Example:** `Device(config-if)# end`	Exits interface configuration mode and returns to privileged EXEC mode.
Step 8	**debug bfd event** **Example:** `Device# debug bfd event`	Enables debugging information for BFD events.
Step 9	**debug bfd packet** **Example:** `Device# debug bfd packet`	Enables debugging information for BFD packets.
Step 10	**monitor event-trace bfd event enable** **Example:**	Enables the event traces for normal BFD events.

	Command or Action	Purpose
	`Device# monitor event-trace bfd event enable`	
Step 11	**monitor event-trace bfd event all enable** **Example:** `Device# monitor event-trace bfd event all enable`	Enables the event trace filters for normal BFD events.
Step 12	**monitor event-trace bfd packet enable** **Example:** `Device# monitor event-trace bfd packet enable`	Enables the event traces for BFD packet events.
Step 13	**monitor event-trace bfd packet all enable** **Example:** `Device# monitor event-trace bfd packet all enable`	Enables the event trace filters for BFD packet events.
Step 14	**show monitor event-trace bfd** **Example:** `Device# show monitor event-trace bfd`	Displays event trace messages for BFD events. Use the **critical**, **event**, and **packet** keywords to display event trace messages for critical BFD events, normal BFD events, and BFD packet events, respectively.

Configuration Examples for BFD Debug Enhancement

Example: Configuring BFD Debug Enhancement

```
Device> enable
Device# configure terminal
Device(config)# interface GigabitEthernet 0/0/0
Device(config-if)# bfd interval 50 min_rx 50 multiplier 5
Device(config-if)# end
Device# debug bfd event
Device# debug bfd packet
Device# monitor event-trace bfd event enable
Device# monitor event-trace bfd event all enable
Device# monitor event-trace bfd packet enable
Device# monitor event-trace bfd packet all enable
Device# show monitor event-trace bfd critical all
Device# show monitor event-trace bfd event all
Device# show monitor event-trace bfd packet all
```

The following is sample output from the **show monitor event-trace bfd** command for a critical BFD event:

```
Device# show monitor event-trace bfd critical latest

Oct  2 10:57:25.173: BFD-DEBUG CRITICAL: V1 FSM ld:1 handle:1
Event:DETECT TIMER EXPIRED state:UP Rx Count:123 Tx Count: 120
Control Packets Rx:[Oct2 10:57:25.173][Oct2 10:57:25.173][Oct2 10:57:25.173]
Control Packet Tx:[Oct2 10:57:26.173][Oct2 10:57:27.173][Oct2 10:57:28.173]
Echo Rx:[-][-][-]
```

```
Echo Tx:[-][-][-]

Oct  2 10:57:25.173: BFD-DEBUG CRITICAL: V1 FSM ld:1 handle:1
Event:ECHO FAILURE state:UP Rx Count:123 Tx Count: 120
Control Packet Rx:[Oct2 10:57:25.173][Oct2 10:57:25.173][Oct2 10:57:25.173]
Control Packet Tx:[Oct2 10:57:26.173][Oct2 10:57:27.173][Oct2 10:57:28.173]
Echo Rx:[Oct2 10:57:25.273][Oct2 10:57:25.373][Oct2 10:57:25.473]
Echo Tx:[Oct2 10:57:25.273][Oct2 10:57:25.373][Oct2 10:57:25.473]
```

The following is sample output from the **show monitor event-trace bfd** command for a normal BFD event:

Note Logs all events that are logged using the **debug bfd event** command.

```
Device# show monitor event-trace bfd event latest

*Oct 13 20:31:17.043: BFD-DEBUG Event: V1 FSM ld:1 handle:1 event:RX UP state:UP (0)
*Oct 13 20:31:16.945: BFD-DEBUG Event: V1 FSM ld:1 handle:1 event:RX INIT state:DOWN (0)
*Oct 13 20:31:16.150: BFD-DEBUG EVENT: bfd_session_created, proc:EIGRP, idb:Ethernet0/0
handle:1 act
*Oct 13 20:31:14.633: BFD-DEBUG Event: V1 FSM ld:1 handle:1 event:DETECT TIMER EXPIRED
state:ADMIN DOWN (0)
```

The following is sample output from the **show monitor event-trace bfd** command for a BFD packet event:

Note Logs all packet events that are logged using the **debug bfd packet** command.

```
Device# show monitor event-trace bfd packet latest

*Oct 12 05:30:46.849: BFD-DEBUG Packet: Tx IP:10.1.1.2 ld/rd:1/0
diag:7(Administratively Down) AdminDown   cnt:21 (0)
```

Additional References for BFD Debug Enhancement

Related Documents

Related Topic	Document Title
BFD Commands	IP Routing Protocol-Independent Commands A through R IP Routing Protocol-Independent Commands S through T
Cisco IOS Commands	Cisco IOS Master Command List, All Releases

Related Topic	Document Title
Debug Commands	Cisco IOS Debug Command Reference - Commands A through D Cisco IOS Debug Command Reference - Commands E through H Cisco IOS Debug Command Reference - Commands I through L Cisco IOS Debug Command Reference - Commands M through R Cisco IOS Debug Command Reference - Commands S through Z
Bidirectional Forwarding Detection	IP Routing: BFD Configuration Guide, Cisco IOS XE Release 3S (Cisco ASR 903)

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

Feature Information for BFD Debug Enhancement

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. An account on Cisco.com is not required.

Table 1: Feature Information for BFD Debug Enhancement

Feature Name	Releases	Feature Information
BFD Debug Enhancement	Cisco IOS XE Release 3.10S	The Bidirectional Forwarding Detection (BFD) Debug Enhancement feature enables logging of debugging information for critical BFD events, normal BFD events, and BFD packets. This feature enables BFD event traces and BFD event logs. The following commands were introduced: **monitor event-trace bfd**, **monitor event-trace bfd event**, **monitor event-trace bfd packet**, and **show monitor event-trace bfd**.