

BFD Commands

Note All commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router that is introduced from Cisco IOS XR Release 6.3.2. References to earlier releases in Command History tables apply to only the Cisco NCS 5500 Series Router.

Note

- Starting with Cisco IOS XR Release 6.6.25, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 560 Series Routers.
- Starting with Cisco IOS XR Release 6.3.2, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router.
- References to releases before Cisco IOS XR Release 6.3.2 apply to only the Cisco NCS 5500 Series Router.
- Cisco IOS XR Software Release 7.0.1 specific updates are not applicable for the following variants of Cisco NCS 540 Series Routers:
  - N540-28Z4C-SYS-A
  - N540-28Z4C-SYS-D
  - N540X-16Z4G8Q2C-A
  - N540X-16Z4G8Q2C-D
  - N540X-16Z8Q2C-D
  - N540-12Z20G-SYS-A
  - N540-12Z20G-SYS-D
  - N540X-12Z16G-SYS-A
  - N540X-12Z16G-SYS-D

This module describes the commands used to configure and monitor the Bidirectional Forwarding (BFD) protocol on Cisco NCS 5500 Series Routers.

For detailed information about BFD concepts, configuration tasks, and examples, see the Implementing BFD on Routing Command Reference for Cisco NCS 5500 Series Routers module in the *Routing Configuration Guide for Cisco NCS 5500 Series Routers*.

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bfd fast-detect

To enable Bidirectional Forwarding Detection (BFD) to detect failures in the path between adjacent forwarding engines, use the **bfd fast-detect** command in the appropriate configuration mode. To return the software to the default state in which BFD is not enabled, use the **no** form of this command.

bfd fast-detect [**disable** | **strict-mode** | **strict-mode-negotiate** | **override**]
no bfd fast-detect [**disable** | **strict-mode** | **strict-mode-negotiate** | **override**]

Syntax Description

disable	Disables the detection of failures in the path between adjacent forwarding engines for a specified entity, such as a BGP neighbor or OSPF interface.
ipv4	Enables Intermediate System-to-Intermediate System (IS-IS) BFD detection of failures in the path between adjacent forwarding engines. **Note** The **ipv4** keyword is available in IS-IS router configuration mode only.
strict-mode	Prevents the establishment of BGP neighbor session until the BFD session is also up and running. This behaviour is in compliance with Cisco's propriety definition of BFD.
strict-mode-negotiate	Holds down the neighbor session until BFD session is up. This behaviour is in compliance with the IETF standards.
override	Enforce the IETF strict mode for BFD, regardless of the capabilities negotiated between the two peers.

Command Default

BFD detection of failures in the path between adjacent forwarding engines is disabled.

Command Modes

Neighbor configuration

Session group configuration

Neighbor group configuration

Interface configuration

Interface configuration

Router configuration

Area configuration

Area interface configuration

Interface configuration

ARP host-tracking configuration

Command History

Release	Modification
Release 6.1x	This command was introduced.

Release	Modification
Release 24.1.1	This command was made available in the host-tracking configuration mode.
Release 24.3.1	This command was modified. The keywords strict-mode-negotiate and override were added.

Usage Guidelines



Note BFD can support multihop for internal and external BGP peers.

Use the **bfd fast-detect** command to provide protocol- and media-independent, short-duration failure detection of the path between adjacent forwarding engines, including the interfaces and data links.

BFD must be configured on directly connected neighbors for a BFD session to be established between the neighbors.

In OSPF and OSPF3 environments, the setting of the **bfd fast-detect** command is inherited from the highest-level configuration mode in which the command was configured. From the lowest to the highest configuration modes, the inheritance rules are as follows:

- If you enable BFD in area interface configuration mode, it is enabled on the specified interface only.
- If you enable BFD in area configuration mode, it is enabled on all interfaces in the specified area.
- If you enable BFD in router configuration mode, it is enabled on all areas and all associated interfaces in the specified routing process.

In OSPF environments, the **disable** option enables you to override the inheritance rules described previously. For example, if you enable BFD in an OSPF area, BFD is enabled on all interfaces in that area. If you do not want BFD running on one of the interfaces in that area, you must specify the **bfd fast-detect disable** command for that interface only.

To disable BFD or return the software to the default state in which BFD is not enabled in IS-IS router configuration mode, you must enter the **no bfd fast-detect** command.

Task ID

Task ID	Operations
bgp	read, write
isis	read, write
ospf	read, write

Examples

The following example shows how to configure BFD on a BGP router:

```
Router#(config)# route-policy pass-all
Router#(config-rpl)# pass
Router#(config-rpl)# end-policy
Router#(config-rpl)# end
Router## configure
Router#(config)# router bgp 65000
Router#(config-bgp)# bfd minimum-interval 3
Router#(config-bgp)# address-family ipv4 unicast\
Router#(config-bgp-af)# exit
Router#(config-bgp)# neighbor 192.168.70.24
Router#(config-bgp-nbr)# remote-as 2
Router#(config-bgp-nbr)# address-family ipv4 unicast
Router#(config-bgp-nbr)# bfd fast-detect
Router#(config-bgp-nbr)# route-policy pass-all in
Router#(config-bgp-nbr)# route-policy pass-all out
```

The following example shows how to configure host tracking using BFD:

```
Router#(config)# interface BVI1
Router#(config-if)# host-tracking
Router#(config-if-host-tracking)# bgp-gateway
Router#(config-if-host-tracking)# arp
Router#(config-if-host-tracking-arp)# bfd fast-detect
```

The following example shows how to configure the BGP BFD strict-mode negotiate mode, requiring mutual capability advertisement for active BGP and BFD session linkage.

```
Router# configure
Router#(config)# router bgp 65000
Router#(config-bgp)# neighbor 192.168.70.24
Router#(config-bgp-nbr)# bfd fast-detect strict-mode-negotiate
```

The following example show how to configure the BGP BFD strict-mode negotiate override mode to enforce IETF strict mode operation regardless of peer advertisement, ensuring BGP session establishment only after the activation of the BFD session.

```
Router# configure
Router#(config)# router bgp 65000
Router#(config-bgp)# neighbor 192.168.70.24
Router#(config-bgp-nbr)# bfd fast-detect strict-mode-negotiate override
```

bfd minimum-interval

To specify the minimum control packet interval for BFD sessions for the corresponding BFD configuration scope, use the **bfd minimum-interval** command in the appropriate configuration mode. To return the router to the default setting, use the **no** form of this command.

bfd minimum-interval *milliseconds*
no bfd minimum-interval [*milliseconds*]

Syntax Description

milliseconds	Interval between sending BFD hello packets to the neighbor. The range is 300 to 30000 milliseconds.

Command Modes

Router configuration

Interface configuration

Router configuration

Area configuration

Area interface configuration

Interface configuration

Command History

Release	Modification
Release 6.1x	This command was introduced.

Usage Guidelines

In OSPF environments, the setting of the **bfd minimum-interval** command is inherited from the highest-level configuration mode in which the command was configured. From the lowest to the highest configuration modes, the inheritance rules are as follows:

- If you configure the minimum interval in area interface configuration mode, the updated interval affects the BFD sessions on the specified interface only.
- If you configure the minimum interval in area configuration mode, the updated interval affects the BFD sessions on all interfaces in the specified area.
- If you configure the minimum interval in router configuration mode, the updated interval affects the BFD sessions in all areas and all associated interfaces in the specified routing process.

If desired, you can override these inheritance rules by explicitly configuring the **bfd minimum-interval** command for a specific area interface or area.



Note When multiple applications share the same BFD session, the application with the most aggressive timer wins locally. Then, the result is negotiated with the peer router.

Keep the following router-specific rules in mind when configuring the minimum BFD interval:

- The maximum rate in packets-per-second (pps) for BFD sessions is linecard-dependent. If you have multiple linecards supporting BFD, then the maximum rate for BFD sessions per system is the supported linecard rate multiplied by the number of linecards.
- If a session is running in asynchronous mode without echo, then PPS used for this session is (1000 / asynchronous interval in milliseconds).
- If a session is running in asynchronous mode with echo, then PPS used for this session is (1000 / echo interval in milliseconds).

  This is calculated as: 1000 / value of the **bfd minimum-interval** command.

- The table below defines the maximum number of BFD sessions that is allowed per line card.

Table 1: Supported Scale

Timer Value	Maximum Number of Sessions Supported in a line card.	Maximum Number of Sessions Supported in a system.
300 ms	250	500
1 second	250	500
2 seconds	250	500

Task ID

Task ID	Operations
bgp	read, write
isis	read, write
ospf	read, write

Examples

The following example shows how to set the BFD minimum interval for a BGP routing process:

```
RP/0/RP0/CPU0:router(config)# router bgp 6500
RP/0/RP0/CPU0:router(config-bgp)# bfd minimum-interval 300
```

bfd multipath include location

To include specific linecards to host BFD multiple path sessions, use the **bfd multipath include location** command in the XR configuration mode. To remove the configuration, use the **no** form of this command.

bfd multipath include location *node-id*
no bfd multipath include location *node-id*

Syntax Description

location *node-id*	Configures BFD multipath on the specified location. The *node-id* variable is mentioned in the *rack/slot/module* notation.

Command Default

No default behavior or values

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.3x	This command was introduced.

Task ID

Task ID	Operation
bgp	read, write
ospf	read, write
isis	read, write

Example

This example shows how to run the **bfd multipath include location** command on a specific location:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# bfd multipath include location 0/5/CPU0
```

bfd multiplier

To set the Bidirectional Forwarding Detection (BFD) multiplier, use the **bfd multiplier** command in the appropriate configuration mode. To return the router to the default setting, use the **no** form of this command.

bfd multiplier *multiplier*
no bfd multiplier [*multiplier*]

Syntax Description

multiplier	Number of times a packet is missed before BFD declares the neighbor down. The ranges are as follows: • BGP—2 to 16 • IS-IS—2 to 50

Command Default

The default multiplier is 3.

Command Modes

Router configuration

Interface configuration

Router configuration

Area configuration

Area interface configuration

Interface configuration

Command History

Release	Modification
Release 6.1x	This command was introduced.

Usage Guidelines

In OSPF environments, the setting of the **bfd multiplier** command is inherited from the highest-level configuration mode in which the command was configured. From the lowest to the highest configuration modes, the inheritance rules are as follows:

- If you configure a multiplier in area interface configuration mode, the updated multiplier affects the BFD sessions on the specified interface only.
- If you configure a multiplier in area configuration mode, the updated multiplier affects the BFD sessions on all interfaces in the specified area.
- If you configure a multiplier in router configuration mode, the updated multiplier affects the BFD sessions in all areas and all associated interfaces in the specified routing process.

If desired, you can override these inheritance rules by explicitly configuring the **bfd multiplier** command for a specific area interface or area.

If the multiplier is changed using the **bfd multiplier** command, the new value is used to update all existing BFD sessions for the protocol.

Task ID

Task ID	Operations
bgp	read, write
isis	read, write
ospf	read, write

Examples

The following example shows how to set the BFD multiplier in a BGP routing process:

```
RP/0/RP0/CPU0:router(config)# router bgp 65000
RP/0/RP0/CPU0:router(config-bgp)# bfd multiplier 3
```

fast-detect sbfd

To enable seamless bidirectional forwarding detection (SBFD) fast-detection on a specified IPv4 destination address, use the **fast-detect sbfd** command.

fast-detect sbfd

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values.

Command Modes

Tunnel interface configuration

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
mpls-te	read, write

Examples

This example shows how to enable SBFD fast-detection on the specified IPv4 destination address:

```
Router#configure
Router(config)#interface tunnel-te1
Router(config-if)#ipv4 unnumbered loopback0
Router(config-if)#destination 1.1.1.5
Router(config-if)#bfd
Router(config-tunte-bfd)#fast-detect sbfd
Router(config-tunte-bfd)#exit
```

Related Commands

Command	Description
sbfd , on page 21	Enters seamless BFD (SBFD) mode.

hw-module profile offload

To enable the offload of IPv6 BFD to the network processing unit of the line card, use the **hw-module profile offload** command in XR Configuration mode.

Syntax Description

1	Indicates the IPv6 BFD and Precision Timing Protocol (PTP) feature.
2	Indicates the IPv6 BFD and acceleration of route download on the scale line card.
3	Indicates the acceleration of route download on the scale line card and PTP feature.

Syntax Description

This command has no arguments and keywords.

Command Default

The default option is 1.

Command Modes

XR Configuration

Command History

Release	Modification
Release 6.6.1	This command was introduced.

Usage Guidelines

Reload the router for the **hw-module profile offload** command to take effect.

Though you can configure this command on all NCS 5500 routers, this command takes effect only on NCS5501-SE platform.

Example

The following example shows how to offload IPv6 BFD with the PTP feature:

```
Router# configure
Router(config)# hw-module profile offload 1
```

hw-module profile bfd offload disable-v6

To enable the offload of IPv6 BFD sessions to the CPU, use the **hw-module profile bfd offload disable-v6** command in XR Configuration mode.

Syntax Description

This command has no arguments and keywords.

Command Default

Hardware-offload mode

Command Modes

XR Configuration

Command History

Release	Modification
Release 24.4.1	This command was introduced.

Usage Guidelines

Reload the router for the **hw-module profile bfd offload disable-v6** command configuration to take effect.

Example

The following example shows how to offload IPv6 BFD sessions to the CPU:

```
Router# configure
Router(config)# hw-module profile bfd offload disable-v6
```

hw-module profile bfd statistics singlepath

To view statistics specifically for a BFD session, use the **hw-module profile bfd statistics singlepath** command in XR Configuration mode.

hw-module profile bfd statistics singlepath

Syntax Description

This command has no arguments and keywords.

Command Default

Transmission and Reception statistics per-session are not collected.

Command Modes

XR configuration

Command History

Release	Modification
Release 24.1.1	This command was introduced.

Usage Guidelines

You can configure the **hw-module profile bfd statistics singlepath** command only on Cisco NCS 5700 line cards with external-TCAM which provides an extended scale in addition to the on-chip scale. These line cards have only the **l2max-se** and **l3max-se** hardware MDB profiles. Hence, you must configure either of the MDB profiles to be able to configure the **hw-module profile bfd statistics singlepath** command.

Before configuring the **hw-module profile bfd statistics singlepath** command, you need to configure the following commands:

- **hw-module profile npu native-mode-enable** command: Configuring this comamnd enables the Cisco NCS 5700 Series native mode.
- Depending on your network's traffic type, configure either of the following commands:
  - Configure the **hw-module profile mdb l2max-se** command for networks that primarily handle Layer 2 traffic.
  - Configure the **hw-module profile mdb l3max-se** command for networks that primarily handle Layer 3 traffic.

It is necessary to reload the line card after executing the **hw-module profile bfd statistics singlepath** command for the configuration to take effect.

Task ID

Task ID	Operation
bfd	read, write

Example

The following example configures the hardware module profile to collect statistics specifically for single-path BFD sessions.

```
Router# configure
Router# hw-module profile mdb l3max-se
Router# hw-module profile bfd statistics singlepath
Router# commit
```

local-discriminator

To configure a unique local disciminator on the SBFD reflector, use the **local-discriminator** command in SBFD configuration mode.

local-discriminator { *ipv4-address* *32-bit-value* | **dynamic** | **interface** *interface* }

Syntax Description

ipv4-address	Configures the IPv4 address as the local discriminator.
32-bit-value	Configures a unique 32-bit value as the local discriminator.
dynamic	Creates a randomly generated value as the local discriminator.
interface *interface*	Configures the IPv4 address of the interface as the local discriminator.

Command Default

None

Command Modes

SBFD configuration mode

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

To ensure the BFD packet arrives on the intended reflector, configure at least one globally unique discriminator for each reflector. Globally unique discriminators of the reflector are known by the initiator before the session starts.

Example

This example shows how to configure various local discriminators on the SBFD reflector:

```
Router(config)# sbfd
Router(config-sbfd)# local-discriminator 1.1.1.5
Router(config-sbfd)# local-discriminator 987654321
Router(config-sbfd)# local-discriminator dynamic
Router(config-sbfd)# local-discriminator interface Loopback0
```

Related Commands

Command	Description
remote-discriminator, on page 18	Specifies the remote discriminator that maps to the remote target on the SBFD initiator.
remote-target, on page 19	Maps a destination address to a remote discriminator.

Command	Description
sbfd , on page 21	Enters seamless bidirectional forwarding detection (SBFD) mode.
show bfd label session, on page 29	Displays the BFD initiator session information.
show bfd reflector, on page 22	Displays the SBFD reflector configuration.

remote-discriminator

To specify the remote discriminator that maps to the remote target on the SBFD initiator, use the **remote-discriminator** command in SBFD remote target configuration mode.

remote-discriminator *value*

Syntax Description

value	Specifies the remote discriminator value (which maps to the local discriminator of the reflector).

Command Default

None

Command Modes

SBFD remote-target configuration mode

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The SBFD initiator uses a Remote Target Identifier (RTI) table to map a destination address (Target Identifier) to a remote discriminator.

If the destination is an IPv4 address, the destination or target address can be used as the remote discriminator. (Configuration of an RTI is optional.)

Example

This example shows how to configure various local discriminators on the SBFD reflector:

```
Router(config)# sbfd
Router(config-sbfd)# remote-target ipv4 1.1.1.5
Router(config-sbfd-nnnn)# remote-discriminator 16843013
```

Related Commands

Command	Description
local-discriminator, on page 16	Configures a unique local disciminator on the SBFD reflector.
remote-target, on page 19	Maps a destination address to a remote discriminator.
sbfd , on page 21	Enters seamless bidirectional forwarding detection (SBFD) mode.
show bfd label session, on page 29	Displays the BFD initiator session information.
show bfd reflector, on page 22	Displays the SBFD reflector configuration.

remote-target

To map a destination address to a remote discriminator, use the **remote-target** command in SBFD configuration mode.

remote-target ipv4 *ipv4-address*

Syntax Description

ipv4 *ipv4-address*	Configures the IPv4 address of the reflector.

Command Default

None

Command Modes

SBFD configuration mode

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The SBFD initiator uses a Remote Target Identifier (RTI) table to map a destination address (Target Identifier) to a remote discriminator.

Example

This example shows how to configure the SBFD reflector IPv4 address as the remote target:

```
Router(config)#sbfd
Router(config-sbfd)#remote-target ipv4 1.1.1.5
Router(config-sbfd-nnnn)#
```

Related Commands

Command	Description
local-discriminator, on page 16	Configures a unique local disciminator on the SBFD reflector.
remote-discriminator, on page 18	Specifies the remote discriminator that maps to the remote target on the SBFD initiator.
sbfd , on page 21	Enters seamless bidirectional forwarding detection (SBFD) mode.
show bfd label session, on page 29	Displays the BFD initiator session information.
show bfd reflector, on page 22	Displays the SBFD reflector configuration.

router pim

To enter Protocol Independent Multicast (PIM) configuration mode, use the **router pim** command in XR configuration mode. To return to the default behavior, use the **no** form of this command.

router pim [**address family ipv4**]
no router pim [**address family ipv4**]

Syntax Description

address-family	(Optional) Specifies which address prefixes to use.
ipv4	(Optional) Specifies IPv4 address prefixes.

Command Default

The default is IPv4 address prefixes.

Command Modes

XR Config mode

Command History

Release	Modifications
Release 6.3x	This command was introduced.

Task ID

Task ID	Operations
multicast	read, write

Examples

This example shows how to enter PIM configuration mode for IPv4 address prefixes:

```
RP/0/RP0/CPU0:router(config)# router pim
RP/0/RP0/CPU0:router(config-pim-default-ipv4)#
```

This example shows how to enter PIM configuration mode for IPv4 address prefixes:

```
RP/0/RP0/CPU0:router(config)# router pim address-family ipv4
RP/0/RP0/CPU0:router(config-pim-default-ipv4)#
```

sbfd

To enter seamless bidirectional forwarding detection (SBFD) mode for configuring local and remote discriminators, use the **sbfd** command in global configuration mode.

sbfd

Command Modes

Global configuration mode

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Example

This example shows how to enter SBFD configuration mode:

```
Router(config)# sbfd
Router(config-sbfd)#
```

Related Commands

Command	Description
fast-detect sbfd, on page 11	Enables SBFD fast-detection on a specified IPv4 destination address.
local-discriminator, on page 16	Configures a unique local disciminator on the SBFD reflector.
remote-discriminator, on page 18	Specifies the remote discriminator that maps to the remote target on the SBFD initiator.
remote-target, on page 19	Maps a destination address to a remote discriminator.
show bfd label session, on page 29	Displays the SBFD initiator session information.
show bfd reflector, on page 22	Displays the SBFD reflector configuration.

show bfd reflector

To verify the SBFD reflector configuration, use the **show bfd reflector** command.

show bfd reflector { **counter** | **info** } [**location** *node-id*]

Syntax Description

counter	Displays the BFD session counters.
info	Displays the BFD session information.
location *node-id*	(Optional) Displays BFD sessions hosted from the specified location. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
bgp	read
ospf	read
isis	read
mpls-te	read

Example

This example shows how to display the BFD reflector session counters:

```
Router#show bfd reflector counter location 0/0/CPU0
------------------------------------------------------------------------------
Rx                  Tx                              DROPPED
                                      NO PPS      LTI MISS    NO MEMORY   TOTAL
------------------------------------------------------------------------------
961                 960             0           0           0           0
```

This example shows how to display the BFD reflector information:

```
Router# show bfd reflector info location 0/0/CPU0
-------------------------------------
Local        Remote       Src
Discr        Discr       IP Addr
-------------------------------------
16843013     65556       1.1.1.1
```

Related Commands

Command	Description
local-discriminator	Configures a unique local disciminator on the SBFD reflector.
remote-discriminator	Specifies the remote discriminator that maps to the remote target on the SBFD initiator.
remote-target	Maps a destination address to a remote discriminator.
sbfd	Enters seamless bidirectional forwarding detection (SBFD) mode.
show bfd label session	Displays the BFD initiator session information.

show bfd session

To display Bidirectional Forwarding Detection (BFD) session information, use the **show bfd session** command in XR Exec mode.

show bfd [**ipv4** | [**singlehop** | **multihop**] | [**singlehop** | **multihop**] | **all**] **session** [**interface** *type* *interface-path-id* [**destination** *ip-address*] [**detail**]] **location** *node-id*

Syntax Description

ipv4	(Optional) Displays BFD over IPv4 information only.
ipv6	(Optional) Displays BFD over IPv6 information only.
singlehop	(Optional) Displays BFD singlehop information only.
multihop	(Optional) Displays BFD multihop information only.
all	(Optional) Displays both BFD over IPv4 and BFD over IPv6 information.
interface	(Optional) Specifies the interface for which to show information.
type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
destination *ip-address*	(Optional) Displays the BFD session destined for the specified IP address.
detail	(Optional) Displays detailed session information, including statistics and number of state transitions.

location *node-id*	(Optional) Displays BFD sessions hosted from the specified location. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

The default is the default address family identifier (AFI) that is set by the **set default-afi** command.

Command Modes

XR Exec mode

Command History

Release	Modification
Release 6.1x	This command was introduced.

Usage Guidelines

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the line card.
  - *module*: Module number. A physical layer interface module (PLIM) is always 0.
  - *port*: Physical port number of the interface.
- If specifying a virtual interface, the number range varies, depending on interface type.
- The BFD UP time in the show output printed using CLI, and the show output from SNMP may differ. The CLI output is the appropriate value. The difference doesn't impact the functioning of the device.

Task ID

Task ID	Operations
bgp	read
ospf	read
isis	read

Examples

The following example shows the output from the **show bfd session** command with the **detail** keyword and IPv4 as the default:

```
Router# show bfd session detail

I/f:TenGigE0/2/0/0.6, Location:0/2/CPU0, dest:10.0.6.2, src:10.0.6.1
 State:UP for 0d:0h:3m:4s, number of times UP:1
Received parameters:
 Version:1, desired tx interval:2 s, required rx interval:2 s
 Required echo rx interval:1 ms, multiplier:3, diag:None
 My discr:589830, your discr:590028, state UP, D/F/P/C/A:0/0/0/1/0
Transmitted parameters:
 Version:1, desired tx interval:2 s, required rx interval:2 s
```

```
 Required echo rx interval:1 ms, multiplier:3, diag:None
 My discr:590028, your discr:589830, state UP, D/F/P/C/A:0/0/0/1/0
Timer Values:
 Local negotiated async tx interval:2 s
 Remote negotiated async tx interval:2 s
 Desired echo tx interval:250 ms, local negotiated echo tx interval:250 ms
 Echo detection time:750 ms(250 ms*3), async detection time:6 s(2 s*3)
Local Stats:
 Intervals between async packets:
   Tx:Number of intervals=100, min=952 ms, max=2001 ms, avg=1835 ms
       Last packet transmitted 606 ms ago
   Rx:Number of intervals=100, min=1665 ms, max=2001 ms, avg=1828 ms
       Last packet received 1302 ms ago
 Intervals between echo packets:
   Tx:Number of intervals=100, min=250 ms, max=252 ms, avg=250 ms
       Last packet transmitted 188 ms ago
   Rx:Number of intervals=100, min=250 ms, max=252 ms, avg=250 ms
       Last packet received 187 ms ago
 Latency of echo packets (time between tx and rx):
   Number of packets:100, min=1 ms, max=2 ms, avg=1 ms
Session owner information:
  Client           Desired interval         Multiplier
  ---------------- --------------------     --------------
  bgp-             250 ms                   3
```

The following example shows the output from the **show bfd session** command with the **all** keyword, which displays both IPv4 and IPv6 information:

```
Router# show bfd all session location 0/1/CPU0

Mon Nov  5 08:51:50.339 UTC
IPv4:
-----
Interface            Dest Addr           Local det time(int*mult)      State
                                           Echo            Async
-------------------- --------------- ---------------- ---------------- ---------
PO0/1/0/0            10.0.0.2        300ms(100ms*3)   6s(2s*3)         UP
```

Table 2: show bfd session detail command Field Descriptions

Field	Description
I/f	Interface type.
Location	Location of the node that hosts the local endpoint of the connection, in the *rack/slot/module* notation
dest	IP address of the destination endpoint.
src	IP address of the source endpoint.
State	Current state of the connection, and the number of days, hours, minutes, and seconds that this connection has been active.
number of times UP	Number of times this connection has been brought up.

Field	Description
Received parameters	Provides information on the last transmitted control packet for the session: • Version—Version number of the BFD protocol. • desired tx interval—Desired transmit interval. • required rx interval—Required receive interval. • Required echo rx interval—Required echo receive interval. • multiplier— Number of times a packets is missed before BFD declares the neighbor down. • diag—diagnostic code specifying the peer system's reason for the last transition of the session from Up to some other state. • My discr—unique, nonzero discriminator value generated by the transmitting system, used to demultiplex multiple BFD sessions between the same pair of systems. • your discr— discriminator received from the corresponding remote system. This field reflects back the received value of My discr, or is zero if that value is unknown.
Transmitted parameters	Provides information on the last transmitted control packet for the session: • Version—Version number of the BFD protocol. • desired tx interval—Desired transmit interval. • required rx interval—Required receive interval • Required echo rx interval—Required echo receive interval • multiplierNumber of times a packets is missed before BFD declares the neighbor down. • diag—diagnostic code specifying the local system's reason for the last transition of the session from Up to some other state. • My discr—unique, nonzero discriminator value generated by the transmitting system, used to demultiplex multiple BFD sessions between the same pair of systems. • your discr— discriminator received from the corresponding remote system. This field reflects back the received value of My discr, or is zero if that value is unknown.
Timer Values	Provides information on the timer values used by the local and remote ends, as follows: • Local negotiated async tx interval—interval at which control packets are being transmitted by the local end. • Remote negotiated async tx interval—interval at which control packets should be transmitted by the remote end. • Desired echo tx interval—interval at which the local end would like to transmit echo packets. • local negotiated echo tx interval—interval at which echo packets are being transmitted by the local end. • Echo detection time—local failure detection time of echo packets. It is the product of the local negotiated echo tx interval and the local multiplier. • async detection time—local failure detection time of the asynchronous mode (control packets). It is the product of the remote negotiated async tx interval and the remote multiplier.

Field	Description

Local Stats	Displays the local transmit and receive statistics,
	• Intervals between async packets—provides measurements on intervals between control packets (tx and rx):
	  • Number of intervals—number of sampled intervals between control packets
	  • min—minimum measured interval between 2 consecutive control packets
	  • max—maximum measured interval between 2 consecutive control packets
	  • avg—average measured interval between 2 consecutive control packets
	  • Last packet received/transmitted—indicates how long ago the last control packet was received/transmitted.
	• Intervals between echo packets—provides measurements on intervals between echo packets (tx and rx). The measurements have the same meaning as for async packets.
	• Latency of echo packets (time between tx and rx)—provides measurements on latency of echo packets, i.e. the time between tx and rx of echo packets:
	  • Number of packets—number of sampled echo packets.
	  • min—minimum measured latency for echo packets.
	  • max—maximum measured latency of echo packets.
	  • avg—average measured latency of echo packets.

Session owner information	Provides the following information about the session owner. • Client—name of the client application process. • Desired interval—desired interval provided by the client, in milliseconds. • Multiplier—multiplier value provided by the client.

show bfd label session

To display the BFD initiator session information, use the **show bfd label session** command.

show bfd label session [**status**] [**location** *node-id*] [**detail**]

Syntax Description

status	(Optional) Displays the status of the BFD session.
location *node-id*	(Optional) Displays BFD sessions hosted from the specified location. The *node-id* argument is entered in the *rack/slot/module* notation.
detail	(Optional) Displays detailed session information, including statistics and number of state transitions.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
bgp	read
ospf	read
isis	read
mpls-te	read

Example

This example shows how to display the BFD session information:

```
Router#show bfd label session

Interface           Label              Local det time(int*mult)      State
                                     Echo             Async
------------------- ---------------- ---------------- ---------------- ----------
tt1 (LSP:2)         24008            n/a              150ms(50ms*3)    UP
```

This example shows how to display the detailed BFD session information:

```
RP/0/RSP0/CPU0:router5# show bfd label session detail
I/f: tt1 (LSP:2), Location: 0/1/CPU0, Label: 24008
 State: UP for 0d:0h:10m:32s, number of times UP: 1
 Session type: SW/LB/V4/SH/TH/SB
LSP ping request sent:
 Number of times sent: 0 times
 Number of error send: 0 times
 Last sent time: [NA]
 Last result: 0x0 (No error)
 Last error time: [NA]
 Last error: 0x0 (No error)
LSP ping reply rcvd:
 Last received discriminator: 0x0
 Number of times rcvd: 0 times
 Last rcvd time: [NA]
 Last return code/subcode/output: 0/0/''
Received parameters:
 Version: 1, desired tx interval: 50 ms, required rx interval: 50 ms
 Multiplier: 3, diag: None
 My discr: 16843013, your discr: 65556, state UP, D/F/P/C/A: 0/0/0/1/0
Transmitted parameters:
 Version: 1, desired tx interval: 50 ms, required rx interval: 0 ms
 Multiplier: 3, diag: None
 My discr: 65556, your discr: 16843013, state UP, D/F/P/C/A: 1/0/0/1/0
Timer Values:
 Local negotiated async tx interval: 50 ms
 Remote negotiated async tx interval: 50 ms
async detection time: 150 ms(50 ms*3)
Local Stats:
 Intervals between async packets:
   Tx: Number of intervals=100, min=44 ms, max=51 ms, avg=47 ms
       Last packet transmitted 7 ms ago
   Rx: Number of intervals=100, min=40 ms, max=55 ms, avg=47 ms
       Last packet received 44 ms ago
MP download state: BFD_MP_DOWNLOAD_ACK
State change time: Jan  6 12:20:37.073
Session owner information:
                         Desired               Adjusted
  Client               Interval   Multiplier Interval   Multiplier
  -------------------- ---------- ---------- ---------- ----------
  MPLS-TE              50 ms      3          50 ms      3
```

This example shows how to display the status of the BFD session on the specified linecard location:

```
Router#show bfd label session status location 0/1/CPU0
I/f: tt1 (LSP:2), Location: 0/1/CPU0 table_id:0x0
State: UP, flags:0x80040
Iftype: 0x24, basecaps: 36
Async InLabel: 24008
Additional info from Flags:
 FIB is READY
 Session Active on 0/1/CPU0

. . .

Received parameters:
 Version: 1, desired tx interval: 50 ms, required rx interval: 50 ms
 Multiplier: 3, diag: None
 My discr: 16843013, your discr: 65556, state UP, D/F/P/C/A: 0/0/0/1/0

Transmitted parameters:
 Version: 1, desired tx interval: 50 ms, required rx interval: 0 ms
```

```
Multiplier: 3, diag: None
My discr: 65556, your discr: 16843013, state UP, D/F/P/C/A: 1/0/0/1/0
```

Related Commands

Command	Description
local-discriminator	Configures a unique local disciminator on the SBFD reflector.
remote-discriminator	Specifies the remote discriminator that maps to the remote target on the SBFD initiator.
remote-target	Maps a destination address to a remote discriminator.
sbfd	Enters seamless bidirectional forwarding detection (SBFD) mode.
show bfd reflector	Displays the SBFD reflector configuration.