Configuring BFD Support for EIGRP IPv6

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Prerequisites for BFD Support for EIGRP IPv6

EIGRP IPv6 sessions have a shutdown option in router, address family, and address-family interface configuration modes. To enable BFD support on EIGRP IPv6 sessions, the routing process should be in no shut mode in the above mentioned modes.

Restrictions for BFD Support for EIGRP IPv6

- The BFD Support for EIGRP IPv6 feature is supported only in EIGRP named mode.
- EIGRP supports only single-hop Bidirectional Forwarding Detection (BFD).
- The BFD Support for EIGRP IPv6 feature is not supported on passive interfaces.

Information About BFD Support for EIGRP IPv6

The BFD Support for EIGRP IPv6 feature provides Bidirectional Forwarding Detection (BFD) support for Enhanced Interior Gateway Routing Protocol (EIGRP) IPv6 sessions. It facilitates rapid fault detection and alternate-path selection in EIGRP IPv6 topologies. BFD is a detection protocol that provides a consistent failure-detection method for network administrators. Network administrators use BFD to detect forwarding path failures at a uniform rate and not at variable rates for 'Hello' mechanisms of different routing protocols. This failure-detection methodology ensures easy network profiling and planning and consistent and predictable reconvergence time. This document provides information about BFD support for EIGRP IPv6 networks and explains how to configure BFD support in EIGRP IPv6 networks.

How to Configure BFD Support for EIGRP IPv6

The following sections provide information on configuring BFD support for EIGRP IPv6 for an interface and all interfaces.

Configuring BFD Support on All Interfaces

The following steps show how to configure BFD support on all interfaces:

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**ipv6 unicast-routing** **Example:** `Device(config)# ipv6 unicast-routing`	Enables the forwarding of IPv6 unicast datagrams.
Step 4	**interface** *type number* **Example:** `Device(config)# interface ethernet0/0`	Specifies the interface type and number, and enters the interface configuration mode.
Step 5	**ipv6 address** *ipv6-address/prefix-length* **Example:** `Device(config-if)# ipv6 address 2001:DB8:A:B::1/64`	Configures an IPv6 address.
Step 6	**bfd interval** *milliseconds* **min_rx** *milliseconds* **multiplier** *interval-multiplier* **Example:** `Device(config-if)# bfd interval 50 min_rx 50 multiplier 3`	Sets the baseline BFD session parameters on an interface.
Step 7	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode and returns to global configuration mode.
Step 8	**router eigrp** *virtual-name* **Example:**	Specifies an EIGRP routing process and enters router configuration mode.

	Command or Action	Purpose
	`Device(config)# router eigrp name`	
Step 9	**address-family ipv6 autonomous-system** *as-number* **Example:** `Device(config-router)# address-family ipv6 autonomous-system 3`	Enters address family configuration mode for IPv6 and configures an EIGRP routing instance.
Step 10	**eigrp router-id** *ip-address* **Example:** `Device(config-router-af)# eigrp router-id 172.16.1.3`	Sets the device ID used by EIGRP for this address family when EIGRP peers communicate with their neighbors.
Step 11	**af-interface default** **Example:** `Device(config-router-af)# af-interface default`	Configures interface-specific commands on all interfaces that belong to an address family in EIGRP named mode configurations. Enters address-family interface configuration mode.
Step 12	**bfd** **Example:** `Device(config-router-af-interface)# bfd`	Enables BFD on all interfaces.
Step 13	**End** **Example:** `Device(config-router-af-interface)# end`	Exits address-family interface configuration mode and returns to privileged EXEC mode.
Step 14	**show eigrp address-family ipv6 neighbors detail** **Example:** `Device# show eigrp address-family ipv6 neighbors detail`	(Optional) Displays detailed information about the neighbors that are discovered by EIGRP with BFD enabled on an interface.
Step 15	**show bfd neighbors** **Example:** `Device# show bfd neighbors`	(Optional) Displays BFD information to neighbors.

Configuring BFD Support on an Interface

The following steps show how to configure BFD support on an interface:

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:**	Enables privileged EXEC mode. Enter your password if prompted.

	Command or Action	Purpose
	`Device> enable`	
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**ipv6 unicast-routing** **Example:** `Device(config)# ipv6 unicast-routing`	Enables the forwarding of IPv6 unicast datagrams.
Step 4	**interface** *type number* **Example:** `Device(config)# interface ethernet0/0`	Specifies the interface type and number, and enters the interface configuration mode.
Step 5	**ipv6 address** *ipv6-address /prefix-length* **Example:** `Device(config-if)# ipv6 address 2001:DB8:A:B::1/64`	Configures an IPv6 address.
Step 6	**bfd interval** *milliseconds* **min_rx** *milliseconds* **multiplier** *interval-multiplier* **Example:** `Device(config-if)# bfd interval 50 min_rx 50 multiplier 3`	Sets the baseline BFD session parameters on an interface.
Step 7	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode and returns to global configuration mode.
Step 8	**router eigrp** *virtual-name* **Example:** `Device(config)# router eigrp name`	Specifies an EIGRP routing process and enters router configuration mode.
Step 9	**address-family ipv6 autonomous-system** *as-number* **Example:** `Device(config-router)# address-family ipv6 autonomous-system 3`	Enters address family configuration mode for IPv6 and configures an EIGRP routing instance.
Step 10	**eigrp router-id** *ip-address* **Example:** `Device(config-router-af)# eigrp router-id 172.16.1.3`	Sets the device ID used by EIGRP for this address family when EIGRP peers communicate with their neighbors.
Step 11	**af-interface** *interface-type interface-number* **Example:**	Configures interface-specific commands on an interface that belongs to an address family in

	Command or Action	Purpose
	`Device(config-router-af)# af-interface ethernet0/0`	an EIGRP named mode configuration. Enters address-family interface configuration mode.
Step 12	**bfd** **Example:** `Device(config-router-af-interface)# bfd`	Enables BFD on the specified interface.
Step 13	**end** **Example:** `Device(config-router-af-interface)# end`	Exits address-family interface configuration mode and returns to privileged EXEC mode.
Step 14	**show eigrp address-family ipv6 neighbors** **Example:** `Device# show eigrp address-family ipv6 neighbors`	(Optional) Displays neighbors for which have BFD enabled.
Step 15	**show bfd neighbors** **Example:** `Device# show bfd neighbors`	(Optional) Displays BFD information to neighbors.

Configuration Examples for BFD Support for EIGRP IPv6

The following sections provide configuration examples for BFD support for EIGRP:

Example: Configuring BFD Support on All Interfaces

```
Device> enable
Device# configure terminal
Device(config)# ipv6 unicast-routing
Device(config)# interface Ethernet0/0
Device(config-if)# ipv6 address 2001:0DB8:1::12/64
Device(config-if)# bfd interval 50 min_rx 50 multiplier 3
Device(config-if)# exit
Device(config)# router eigrp name
Device(config-router)# address-family ipv6 unicast autonomous-system 1
Device(config-router-af)# eigrp router-id 172.16.0.1
Device(config-router-af)# af-interface default
Device(config-router-af-interface)# bfd
Device(config-router-af-interface)# end
```

The following example displays the output for the **show eigrp address-family ipv6 neighbors detail** command.

```
Device# show eigrp address-family ipv6 neighbors detail
EIGRP-IPv6 VR(test) Address-Family Neighbors for AS(5)
H   Address                 Interface              Hold Uptime   SRTT   RTO  Q  Seq
                                                   (sec)         (ms)       Cnt Num
0   Link-local address:     Et0/0                    14 00:02:04    1  4500  0  4
    FE80::10:2
   Version 23.0/2.0, Retrans: 2, Retries: 0, Prefixes: 1
   Topology-ids from peer - 0
```

```
   Topologies advertised to peer:   base

Max Nbrs: 0, Current Nbrs: 0

BFD sessions
NeighAddr         Interface
FE80::10:2            Ethernet0/0
```

The following example displays the output for the **show bfd neighbor** command.

```
Device# show bfd neighbors

IPv6 Sessions
NeighAddr                              LD/RD         RH/RS     State     Int
FE80::10:2                              2/0          Down      Down      Et0/0
```

Example: Configuring BFD Support on an Interface

The following example shows how to configure BFD Support on an interface:

```
Device> enable
Device# configure terminal
Device(config)# ipv6 unicast-routing
Device(config)# Ethernet0/0
Device(config-if)# ipv6 address 2001:DB8:A:B::1/64
Device(config-if)# bfd interval 50 min_rx 50 multiplier 3
Device(config-if)# exit
Device(config)# router eigrp name
Device(config-router)# address-family ipv6 autonomous-system 3
Device(config-router-af)# af-interface Ethernet0/0
Device(config-router-af-interface)# bfd
Device(config-router-af-interface)# end
```

Additional References

Related Documents

Related Topic	Document Title
BFD commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples.	See the *IP Routing* section of the *Command Reference (Catalyst 9400 Series Switches)*
EIGRP commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples.	See the *IP Routing* section of the *Command Reference (Catalyst 9400 Series Switches)*
Configuring EIGRP	See the *Routing* section of the *Software Configuration Guide (Catalyst 9400 Series Switches)*

Feature History for BFD Support for EIGRP IPv6

This table provides release and related information for the features explained in this module.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Gibraltar 16.11.1	BFD Support for EIGRP IPv6	The BFD Support for EIGRP IPv6 feature provides BFD support for EIGRP IPv6 sessions.
Cisco IOS XE Cupertino 17.7.1	BFD Support for EIGRP IPv6	This feature was implemented on the supervisor modules C9400X-SUP-2 and C9400X-SUP-2XL.

Use the Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/.