OSPF Support for Fast Hello Packets

The OSPF Support for Fast Hello Packets feature provides a way to configure the sending of hello packets in intervals less than 1 second. Such a configuration would result in faster convergence in an Open Shortest Path First (OSPF) network.

History for the OSPF Support for Fast Hello Packets Feature

Release	Modification
12.0(23)S	This feature was introduced.
12.2(15)T	This feature was integrated into Cisco IOS Release 12.2(15)T.
12.2(18)S	This feature was integrated into Cisco IOS Release 12.2(18)S.
12.2(27)SBC	This feature was integrated into Cisco IOS Release 12.2(27)SBC.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

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CISCO SYSTEMS

Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Prerequisites for OSPF Support for Fast Hello Packets

OSPF must be configured in the network already or configured at the same time as the OSPF Support for Fast Hello Packets feature.

Information About OSPF Support for Fast Hello Packets

The following sections describe concepts related to OSPF support for fast hello packets:

OSPF Hello Interval and Dead Interval

OSPF hello packets are packets that an OSPF process sends to its OSPF neighbors to maintain connectivity with those neighbors. The hello packets are sent at a configurable interval (in seconds). The defaults are 10 seconds for an Ethernet link and 30 seconds for a non broadcast link. Hello packets include a list of all neighbors for which a hello packet has been received within the *dead interval*. The dead interval is also a configurable interval (in seconds), and defaults to four times the value of the hello interval. The value of all hello intervals must be the same within a network. Likewise, the value of all dead intervals must be the same within a network.

These two intervals work together to maintain connectivity by indicating that the link is operational. If a router does not receive a hello packet from a neighbor within the dead interval, it will declare that neighbor to be down.

OSPF Fast Hello Packets

OSPF fast hello packets refer to hello packets being sent at intervals of less than 1 second. To understand fast hello packets, you should already understand the relationship between OSPF hello packets and the dead interval. See the section "OSPF Hello Interval and Dead Interval" section on page 2.

OSPF fast hello packets are achieved by using the **ip ospf dead-interval** command. The dead interval is set to 1 second, and the hello-multiplier value is set to the number of hello packets you want sent during that 1 second, thus providing subsecond or "fast" hello packets.

When fast hello packets are configured on the interface, the hello interval advertised in the hello packets that are sent out this interface is set to 0. The hello interval in the hello packets received over this interface is ignored.

The dead interval must be consistent on a segment, whether it is set to 1 second (for fast hello packets) or set to any other value. The hello multiplier need not be the same for the entire segment as long as at least one hello packet is sent within the dead interval.

Benefits of OSPF Fast Hello Packets

The benefit of the OSPF Fast Hello Packets feature is that your OSPF network will experience faster convergence time than it would without fast hello packets. This feature allows you to detect lost neighbors within 1 second. It is especially useful in LAN segments, where neighbor loss might not be detected by the Open System Interconnection (OSI) physical layer and data-link layer.

How to Configure OSPF Fast Hello Packets

The following section describes how to enable OSPF fast hello packets:

- Configuring OSPF Fast Hello Packets, page 3

Configuring OSPF Fast Hello Packets

This section describes how to configure OSPF fast hello packets.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ip ospf dead-interval minimal hello-multiplier** *multiplier*
5. **end**
6. **show ip ospf interface** [*interface-type interface-number*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables higher privilege levels, such as privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface** *type number* **Example:** `Router(config)# interface ethernet 0`	Configures an interface type and enters interface configuration mode.

	Command or Action	Purpose
Step 4	**ip ospf dead-interval minimal hello-multiplier** *multiplier* **Example:** `Router(config-if)# ip ospf dead-interval minimal hello-multiplier 5`	Sets the interval during which at least one hello packet must be received, or else the neighbor is considered down. • In the example, OSPF Support for Fast Hello Packets is enabled by specifying the **minimal** keyword and the **hello-multiplier** keyword and value. Because the multiplier is set to 5, five hello packets will be sent every second.
Step 5	**end** **Example:** `Router(config-if)# end`	(Optional) Saves configuration commands to the running configuration file, exits configuration mode, and returns to privileged EXEC mode. • Use this command when you are ready to exit configuration mode and save the configuration to the running configuration file.
Step 6	**show ip ospf interface** [*interface-type interface-number*] **Example:** `Router# show ip ospf interface ethernet 1/3`	(Optional) Displays OSPF-related interface information. • The relevant fields that verify OSPF fast hello packets are indicated in the sample output following this table.

Examples

The following example output verifies that OSPF Support for Fast Hello Packets is configured. In the line that begins with "Timer intervals configured," the hello interval is 200 milliseconds, the dead interval is 1 second, and the next hello packet is due in 76 milliseconds.

```
Router# show ip ospf interface ethernet 1/3

Ethernet1/3 is up, line protocol is up
  Internet Address 172.16.1.2/24, Area 0
  Process ID 1, Router ID 172.17.0.2, Network Type BROADCAST, Cost:1
  Transmit Delay is 1 sec, State DR, Priority 1
  Designated Router (ID) 172.17.0.2, Interface address 172.16.1.2
  Backup Designated router (ID) 172.16.0.1, Interface address 172.16.1.1
  Timer intervals configured, Hello 200 msec, Dead 1, Wait 1, Retransmit 5
    Hello due in 76 msec
Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 2, maximum is 3
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 172.16.0.1  (Backup Designated Router)
  Suppress hello for 0 neighbor(s)
```

Configuration Examples for OSPF Support for Fast Hello Packets

The following section provides a configuration example:

- OSPF Fast Hello Packets: Example, page 5

OSPF Fast Hello Packets: Example

The following example configures OSPF fast hello packets; the dead interval is 1 second and five hello packets are sent every second:

```
interface ethernet 1
 ip ospf dead-interval minimal hello-multiplier 5
```

Additional References

The following sections provide references related to OSPF Support for Fast Hello Packets.

Related Documents

Related Topic	Document Title
OSPF configuration tasks	"Configuring OSPF" chapter in the part, "IP Routing Protocols" in the *Cisco IOS Release 12.0 Network Protocols Configuration Guide, Part 1*
OSPF commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples	"OSPF Commands" chapter in the part "IP Routing Protocols" in the *Cisco IOS Release 12.0 Network Protocols Command Reference, Part 1*

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFCs	Title
None	—

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Command Reference

This section documents a modified command only.

- **ip ospf dead-interval**

ip ospf dead-interval

To set the interval during which at least one hello packet must be received from a neighbor before the router declares that neighbor down, use the **ip ospf dead-interval** command in interface configuration mode. To restore the default value, use the **no** form of this command.

ip ospf dead-interval {*seconds* | **minimal hello-multiplier** *multiplier*}

no ip ospf dead-interval

Syntax Description

seconds	Interval (in seconds) during which the router must receive at least one hello packet from a neighbor or else that neighbor is removed from the peer list and does not participate in routing. The range is 1 to 65535. The value must be the same for all nodes on the network.
minimal	Sets the dead interval to 1 second. Using this keyword requires that the **hello-multiplier** keyword and *multiplier* argument are also configured.
hello-multiplier *multiplier*	Integer value in the range from 3 to 20, representing the number of hello packets sent during 1 second.

Defaults

seconds: Four times the interval set by the **ip ospf hello-interval** command.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0(23)S	The **minimal** keyword, **hello-multiplier** keyword and *multiplier* argument were added to allow Open Shortest Path First (OSPF) support for fast hello packets.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.

Usage Guidelines

The dead interval is advertised in OSPF hello packets. This value must be the same for all networking devices on a specific network.

Specifying a smaller dead interval (*seconds*) will give faster detection of a neighbor being down and improve convergence, but might cause more routing instability.

OSPF Support for Fast Hello Packets

By specifying the **minimal** and **hello-multiplier** keywords with a *multiplier* argument, you are enabling OSPF fast hello packets. The **minimal** keyword sets the dead interval to 1 second, and the hello-multiplier value sets the number of hello packets sent during that 1 second, thus providing subsecond or “fast” hello packets.

When fast hello packets are configured on the interface, the hello interval advertised in the hello packets that are sent out this interface is set to 0. The hello interval in the hello packets received over this interface is ignored.

The dead interval must be consistent on a segment, whether it is set to 1 second (for fast hello packets) or set to any other value. The hello multiplier need not be the same for the entire segment as long as at least one hello packet is sent within the dead interval.

Use the **show ip ospf interface** command to verify the dead interval and fast hello interval.

Examples

The following example sets the OSPF dead interval to 20 seconds:

```
interface ethernet 1
 ip ospf dead-interval 20
```

The following example configures OSPF fast hello packets; the dead interval is 1 second and there are five hello packets sent every second:

```
interface ethernet 1
 ip ospf dead-interval minimal hello-multiplier 5
```

Related Commands

Command	Description
ip ospf hello-interval	Interval between hello packets that the Cisco IOS software sends on the interface.
show ip ospf interface	Displays OSPF-related information.