



OSPF Per-Interface Link-Local Signaling

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Feature History for OSPF link-local signaling per interface basis

This table provides release and platform support 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 Name and Description	Supported Platform
Cisco IOS XE 17.18.1	OSPF link-local signaling per interface basis: The OSPF link-local signaling per interface basis is an enhancement feature that allows you to selectively enable or disable link-local signaling for a specific interface regardless of the device's global OSPF link-local signaling configuration.	Cisco C9350 Series Smart Switches Cisco C9610 Series Smart Switches

OSPF link-local signaling per-interface basis

OSPF link-local signaling per-interface basis is an enhancement feature that allows you to selectively enable or disable link-local signaling for a specific interface regardless of the device's global OSPF link-local signaling configuration.

When you enable link-local signaling globally in OSPF, it becomes active on all OSPF-enabled interfaces by default. The OSPF link-local signaling per-interface basis feature lets you override the global setting for individual interfaces. You can enable or disable link-local signaling on specific interfaces as needed. For example, disabling link-local signaling on an interface connected to a non-Cisco device, that may be noncompliant with RFC 2328, can prevent problems with the forming of OSPF neighbors in the network.

Purpose of link-local signaling

Link-local signaling provides a mechanism to append additional data to OSPF hello and database description packets by using a dedicated link-local signaling data block (a TLV structure). This extra space allows OSPF devices to exchange more information during adjacency formation and maintenance, without changing the base OSPF packet formats. For example, the OSPF Nonstop Forwarding (NSF) Awareness feature uses this functionality to let customer premises equipment (CPE) devices that are NSF-aware help NSF-capable devices provide nonstop forwarding of packets.

Enable or disable link-local signaling on a per interface basis

Perform this procedure to enable or disable link-local signaling on a per-interface basis.

Procedure

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 **interface *interface-id*****Example:**

```
Device(config)# interface gigabitethernet 1/0/1
```

Enters interface configuration mode, and specifies the Layer 3 interface to configure.

Step 4 **ip address *ip-address* [*mask*] [*secondary*]****Example:**

```
Device(config-if)# ip address 10.2.145.20 255.255.255.0
```

Sets a primary or secondary IP address for an interface.

- *ip-address*: The IPv4 address you want to assign to the interface.
- *mask*: The subnet mask for the IP address.
- **secondary**: (Optional) Specifies that the address is a secondary IP address, allowing the interface to have multiple IP addresses from different subnets.

Step 5 **no ip directed-broadcast[*access-list-number* | *extended access-list-number*]**

Example:

```
Device(config-if) # no ip directed-broadcast
```

Drops directed broadcasts destined for the subnet to which that interface is attached, rather than broadcasting them.

access-list-number | extended-access-list-number: (Optional) Allows you to specify an access list to filter which directed broadcasts are affected.

Step 6 **ip ospf message-digest-key** *key-id encryption-type md5 key***Example:**

```
Device(config-if) # ip ospf message-digest-key 100 md5 testing
```

Enables OSPF Message Digest 5 (MD5) algorithm authentication.

- *key-id*: A unique identifier (number) for the key on this interface. The range is from 1 to 255.
- *encryption-type*: The type of encryption
 - 0 means the password is in plain text.
 - 7 means the password is encrypted in Cisco's type 7 encryption.
- **md5**: Specifies that MD5 authentication is being used.
- *key*: The actual key string (password) used for authentication.

Step 7 **[no | default] ip ospf lls [disable]****Example:**

```
Device(config-if) # ip ospf lls disable
```

Enables or disables link-local signaling on an interface, regardless of the global setting.

- **ip ospf lls**: Enables OSPF link-local signaling on the interface (overrides global settings if configured).
- **disable**: Disables link-local signaling on this specific interface, even if link-local signaling is enabled globally.
- **no**: Removes the **ip ospf lls** configuration or disables link-local signaling on the interface.
- **default**: Resets the command to its default state on the interface.

Step 8 **end****Example:**

```
Device(config-if) # end
```

Returns to privileged EXEC mode.

Configuration example for OSPF link-local signaling per-interface basis

These sections provide configuration examples for OSPF link-local signaling per-interface basis.

Example: Configure OSPF link-local signaling per-interface basis

In this example, link-local signalling has been enabled on Ethernet interface 1/0 and disabled on Ethernet interface 2/0:

```
Device> enable
Device# configure terminal
Device(config)# interface Ethernet1/0
Device(config-if)# ip address 10.2.145.2 255.255.255.0
Device(config-if)# no ip directed-broadcast
Device(config-if)# ip ospf message-digest-key 1 md5 testing
Device(config-if)# ip ospf lls
Device(config-if)# exit

Device(config)# interface Ethernet2/0
Device(config-if)# ip address 10.1.145.2 255.255.0.0
Device(config-if)# no ip directed-broadcast
Device(config-if)# ip ospf message-digest-key 1 md5 testing
Device(config-if)# ip ospf lls disable
Device(config-if)# exit

Device(config)# interface Ethernet3/0
Device(config-if)# ip address 10.3.145.2 255.255.255.0
Device(config-if)# no ip directed-broadcast

Device(config-if)# router ospf 1
Device(config-router)# log-adjacency-changes detail
Device(config-router)# area 0 authentication message-digest
Device(config-router)# redistribute connected subnets
Device(config-router)# network 10.0.0.0 0.255.255.255 area 1
Device(config-router)# network 10.2.3.0 0.0.0.255 area 1
```

Example: Verify OSPF link-local signaling per-interface basis configuration

In the following example, the **show ip ospf interface** command has been entered to verify that link-local signaling has been enabled for Ethernet interface 1/0 and disabled for interface Ethernet 2/0

```
Device# show ip ospf interface
Ethernet1/0 is up, line protocol is up
Internet Address 10.2.145.2/24, Area 1
Process ID 1, Router ID 10.22.222.2, Network Type BROADCAST, Cost: 10
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 10.2.2.3, Interface address 10.2.145.1
Backup Designated router (ID) 10.22.222.2, Interface address 10.2.145.2
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
oob-resync timeout 40
Hello due in 00:00:00
! Supports Link-local Signaling (LLS)
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 2, maximum is 8
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
```

```
Adjacent with neighbor 10.2.2.3 (Designated Router)
Suppress hello for 0 neighbor(s)
Ethernet2/0 is up, line protocol is up
Internet Address 10.1.145.2/16, Area 1
Process ID 1, Router ID 10.22.222.2, Network Type BROADCAST, Cost: 10
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 10.2.2.3, Interface address 10.1.145.1
Backup Designated router (ID) 10.22.222.2, Interface address 10.1.145.2
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
oob-resync timeout 40
Hello due in 00:00:04
! Does not support Link-local Signaling (LLS)
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 2, maximum is 11
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 45.2.2.3 (Designated Router)
Suppress hello for 0 neighbor(s)
```

