



## Prefix Suppression Support for OSPFv3

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## Feature History for Prefix Suppression Support for OSPFv3

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	Prefix Suppression Support for OSPFv3: The OSPFv3 Prefix Suppression Support is an enhancement feature that allows devices to suppress the advertisement of IPv4 and IPv6 prefixes for directly connected networks within their LSAs.	Cisco C9610 Series Smart Switches

## Prefix Suppression Support for OSPFv3

The OSPFv3 Prefix Suppression Support is an enhancement feature that allows devices to suppress the advertisement of IPv4 and IPv6 prefixes for directly connected networks within their Link-State Advertisements (LSAs). In large OSPFv3 deployments, reducing the number of prefixes included in LSAs helps to improve OSPFv3 convergence times.

## Why does prefix suppression work on OSPFv3 and not OSPFv2

In OSPFv3, the handling of addressing information has been decoupled from the core OSPF protocol. Unlike OSPFv2, where network addresses are embedded within primary LSA types such as Router-LSAs and

Network-LSAs, OSPFv3's Router-LSAs and Network-LSAs do not include network addresses. Instead, these LSAs focus solely on describing the network topology. This separation of topology and addressing information makes OSPFv3 flexible and network-protocol-independent, allowing it to support multiple address families more efficiently.

As a result, hiding prefixes in OSPFv3 is straightforward. Suppressed prefixes are simply excluded from the intra-area-prefix-LSA, the LSA type responsible for advertising both IPv4 and IPv6 prefixes within an area. Additionally, OSPFv3 can also communicate certain prefixes through link-LSAs, which are used to advertise a device's IPv6 link-local address and other link-specific information. This approach streamlines prefix management and enhances flexibility in large OSPFv3 deployments.



**Note** A device only suppresses prefixes that are locally configured on its own interfaces; it does not suppress or filter prefixes that are learned from other routers through link-LSAs. This ensures that only the device's local prefix advertisements are affected by suppression, while information received from neighboring routers remains unchanged.

## Prefix suppression methods

There are two prefix suppression methods available.

- Global Prefix Suppression:

You can decrease OSPFv3 convergence time by configuring the OSPFv3 process to suppress the advertisement of all IPv4 and IPv6 prefixes. This is done using the **prefix-suppression** command in either router configuration mode or address-family configuration mode.

- Interface-Level Prefix Suppression:

You can prevent a specific OSPFv3 interface from advertising its IP network to neighbors by using the **ipv6 ospf prefix-suppression** or **ospfv3 prefix-suppression** command in interface configuration mode.

## How to configure Prefix Suppression Support for OSPFv3

This section shows how to configure prefix suppression support for OSPFv3.

### Configure Prefix Suppression Support of the OSPFv3 Process

Perform this task to suppress prefixes of the OSPFv3 process on a global level. This task explains how to suppress prefixes on a global level and not based on IPv6 address-family.

#### Before you begin

Prefixes that are associated with loopbacks, secondary IP addresses, and passive interfaces are not suppressed because typical network designs require prefixes to remain reachable.

## 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 router ospfv3 process-id [vrf vrf-name]

**Example:**

```
Device(config)# router ospfv3 15
```

Enables OSPF routing and enters router configuration mode.

- *process-id*: The process ID is an internally used identification parameter that is locally assigned. Each OSPF process has a unique process ID.  
Process ID can be a positive integer from 1 to 65535.
- *vrf*: Indicates that the OSPF process is being configured for a specific VRF.
- *vrf-name*: Specifies the name of the VRF for which this OSPF process is being created.

### Step 4 prefix-suppression

**Example:**

```
Device(config-router)# prefix-suppression
```

Prevents OSPFv3 from advertising all IPv4 and IPv6 prefixes, except for prefixes associated with loopbacks, secondary IP addresses, and passive interfaces.

### Step 5 end

**Example:**

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

Returns to privileged EXEC mode.

### Step 6 show ospfv3

**Example:**

```
Device# show ospfv3
```

Displays general information about OSPFv3 routing processes.

# Configure Prefix Suppression Support of the OSPFv3 Process with IPv6 address family

Perform this task to suppress prefixes of the OSPFv3 process on a global level. This task explains how to suppress prefixes based on IPv6 address-family.

## Before you begin

Prefixes that are associated with loopbacks, secondary IP addresses, and passive interfaces are not suppressed because typical network designs require prefixes to remain reachable.

## 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 router ospfv3 process-id [vrf vrf-name]

#### Example:

```
Device(config)# router ospfv3 15
```

Enables OSPF routing and enters router configuration mode.

- *process-id*: The process ID is an internally used identification parameter that is locally assigned. Each OSPF process has a unique process ID.

Process ID can be a positive integer from 1 to 65535.

- *vrf*: Indicates that the OSPF process is being configured for a specific VRF.
- *vrf-name*: Specifies the name of the VRF for which this OSPF process is being created.

### Step 4 address-family ipv6 unicast

#### Example:

```
Device(config-router)# address-family ipv6 unicast
```

Enters IPv6 address family configuration mode for OSPFv3.

### Step 5 prefix-suppression

#### Example:

```
Device(config-router)# prefix-suppression
```

Prevents OSPFv3 from advertising all IPv4 and IPv6 prefixes, except for prefixes associated with loopbacks, secondary IP addresses, and passive interfaces.

**Step 6**      **end**

**Example:**

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

Returns to privileged EXEC mode.

**Step 7**      **show ospfv3**

**Example:**

```
Device# show ospfv3
```

Displays general information about OSPFv3 routing processes.

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## Configure Prefix Suppression Support on a per-interface basis

Perform this task to suppress prefixes of the OSPFv3 process on a global level.

### Before you begin

If you have globally suppressed IPv4 and IPv6 prefixes from connected IP networks by configuring the **prefix-suppression** router configuration command, the interface configuration command takes precedence over the router configuration command.

### Procedure

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**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**      Choose one of the following:

- **ipv6 ospf prefix-suppression [disable]**
- **ospfv3 prefix-suppression disable**

**Example:**

```
Device(config-if)# ipv6 ospf prefix-suppression
OR
Device(config-if)# ospfv3 1 prefix-suppression disable
```

Prevents OSPFv3 from advertising IPv4 and IPv6 prefixes that belong to a specific interface, except those that are associated with secondary IP addresses.

**Step 5**      **end****Example:**

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

Returns to privileged EXEC mode.

**Step 6**      **show ospfv3****Example:**

```
Device# show ospfv3
```

Displays general information about OSPFv3 routing processes.

## Troubleshoot IPv4 and IPv6 prefix suppression

Perform this task to check the configuration for IPv4 and IPv6 prefix suppression.

### Procedure

**Step 1**      **enable****Example:**

```
Device> enable
```

Enables privileged EXEC mode.

Enter your password, if prompted.

**Step 2**      **debug ospfv3 lsa-generation****Example:**

```
Device# debug ospfv3 lsa-generation
```

Displays information about each OSPFv3 LSA that is generated.

**Step 3**      **debug condition interface** *interface-type interface-number* [**dlci dlc**i] [**vc** {*vci* | *vpi* | *vci*}]**Example:**

```
Device# debug condition interface ethernet1/0/1
```

Limits output for some debug commands on the basis of the interface or virtual circuit.

- *interface-type*: The type of interface (e.g., GigabitEthernet, Serial, FastEthernet).
- *interface-number*: The specific interface number (e.g., 0/0, 1/0/1).
- *dlci dlc*i: (Optional) Specifies a Data Link Connection Identifier, used with Frame Relay interfaces.
- *vc {vci | vpi | vci}*: Specifies virtual circuit identifiers, used for ATM or other VC-based interfaces.

#### Step 4 **show debugging**

##### Example:

```
Device# show debugging
```

Displays information about the types of debugging that are enabled for your device.

#### Step 5 **show logging [slot slot-number | summary]**

##### Example:

```
Device# show logging
```

Displays the state of syslog and the contents of the standard system logging buffer.

## Configuration example for Prefix Suppression Support for OSPFv3

The following example shows how to configure prefix suppression support for OSPFv3 in router configuration mode:

```
Device> enable
Device# configure terminal
Device(config)# router ospfv3 15
Device(config-router)# prefix-suppression
Device(config-router)# address-family ipv6 unicast
Device(config-router-af)# router-id 0.0.0.6
Device(config-router-af)# exit-address-family
```

The following example shows how to configure prefix suppression support for OSPFv3 in router configuration mode:

```
Device> enable
Device# configure terminal
Device(config)# router ospfv3 15
Device(config-router)# address-family ipv6 unicast
Device(config-router-af)# router-id 0.0.0.6
Device(config-router)# prefix-suppression
Device(config-router-af)# exit-address-family
```

The following example shows how to configure prefix suppression support for OSPFv3 in interface configuration mode:

```
Device> enable
Device# configure terminal
Device(config)# interface Ethernet1/0/1
Device(config-if)# ip address 10.0.0.1 255.255.255.0
Device(config-if)# ipv6 address 2001:201::201/64
```

```
Device(config-if) # ipv6 enable  
Device(config-if) # ospfv3 prefix-suppression  
Device(config-if) # ospfv3 1 ipv4 area 0  
Device(config-if) # ospfv3 1 ipv6 area 0  
Device(config-if) # end
```