



Configuring Prefix Suppression Support for OSPFv3

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Prefix Suppression Support for OSPFv3

This feature enables Open Shortest Path First version 3 (OSPFv3) to hide the IPv4 and IPv6 prefixes of connected networks from link-state advertisements (LSAs). When OSPFv3 is deployed in large networks, limiting the number of IPv4 and IPv6 prefixes that are carried in the OSPFv3 LSAs can speed up OSPFv3 convergence.

This feature can also be utilized to enhance the security of an OSPFv3 network by allowing the network administrator to prevent IP routing toward internal nodes.

Prerequisites for Prefix Suppression Support for OSPFv3

Before you can use the mechanism to exclude IPv4 and IPv6 prefixes from LSAs, the OSPFv3 routing protocol must be configured.

Information About Prefix Suppression Support for OSPFv3

The following sections provide information about prefix suppression support for OSPFv3

OSPFv3 Prefix Suppression Support

The OSPFv3 Prefix Suppression Support feature allows you to hide IPv4 and IPv6 prefixes that are configured on interfaces running OSPFv3.

In OSPFv3, addressing semantics have been removed from the OSPF protocol packets and the main LSA types, leaving a network-protocol-independent core. This means that Router-LSAs and network-LSAs no longer contain network addresses, but simply express topology information. The process of hiding prefixes is simpler in OSPFv3 and suppressed prefixes are simply removed from the intra-area-prefix-LSA. Prefixes are also propagated in OSPFv3 via link LSAs.

The OSPFv3 Prefix Suppression feature provides a number of benefits. The exclusion of certain prefixes from advertisements means that there is more memory available for LSA storage, bandwidth and buffers for LSA flooding, and CPU cycles for origination and flooding of LSAs and for SPF computation. Prefixes are also filtered from link LSAs. A device only filters locally configured prefixes, not prefixes learnt via link LSAs. In addition, security has been improved by reducing the possibility of remote attack with the hiding of transit-only networks.

Globally Suppress IPv4 and IPv6 Prefix Advertisements by Configuring the OSPFv3 Process

You can reduce OSPFv3 convergence time by configuring the OSPFv3 process on a device to prevent the advertisement of all IPv4 and IPv6 prefixes by using the **prefix-suppression** command in router configuration mode or address-family configuration mode.



Note Prefixes that are associated with loopbacks, secondary IP addresses, and passive interfaces are not suppressed by the **router mode** or the **address-family** configuration commands because typical network designs require prefixes to remain reachable.

Suppress IPv4 and IPv6 Prefix Advertisements on a Per-Interface Basis

You can explicitly configure an OSPFv3 interface not to advertise its IP network to its neighbors by using the **ipv6 ospf prefix-suppression** command or the **ospfv3 prefix-suppression** command in interface configuration mode.



Note 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.

How to Configure Prefix Suppression Support for OSPFv3

The following sections provide configuration examples for prefix suppression support for OSPFv3.

Configuring Prefix Suppression Support of the OSPFv3 Process

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	router ospfv3 <i>process-id</i> [<i>vrf vpn-name</i>] Example: Device(config)# router ospfv3 23	Configures an OSPFv3 routing process and enters router configuration mode.
Step 4	prefix-suppression Example: Device(config-router)# prefix-suppression	Prevents OSPFv3 from advertising all IPv4 and IPv6 prefixes, except prefixes that are 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. Note Use this command to verify that IPv4 and IPv6 prefix suppression has been enabled.

Configuring Prefix Suppression Support of the OSPFv3 Process in Address-Family Configuration Mode

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	router ospfv3 process-id [vrf vpn-name] Example: Device(config)# router ospfv3 23	Configures an OSPFv3 routing process and enters router configuration mode.
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-af)# prefix-suppression	Prevents OSPFv3 from advertising all IPv4 and IPv6 prefixes, except prefixes that are associated with loopbacks, secondary IP addresses, and passive interfaces.
Step 6	end Example: Device(config-router-af)# end	Returns to privileged EXEC mode.
Step 7	show ospfv3 Example: Device# show ospfv3	Displays general information about OSPFv3 routing processes. Note Use this command to verify that IPv4 and IPv6 prefix suppression has been enabled.

Configuring Prefix Suppression Support on a Per-Interface Basis

Procedure

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

	Command or Action	Purpose
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface type number Example: Device(config)# interface serial 0/0	Configures an interface type and enters interface configuration mode.
Step 4	Do one of the following: <ul style="list-style-type: none"> • ipv6 ospf prefix-suppression [disable] • ospfv3 prefix-suppression disable Example: Device(config-if)# ipv6 ospf prefix-suppression Example: 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. <ul style="list-style-type: none"> • When you enter the ipv6 ospf prefix-suppression command or the ospfv3 prefix-suppression command in interface configuration mode, it takes precedence over the prefix-suppression command that is entered in router configuration mode.
Step 5	end Example: Device(config-if)# end	Returns to privileged EXEC mode.
Step 6	show ospfv3 interface Example: Device# show ospfv3 interface	Displays OSPFv3-related interface information. Note Use this command to verify that IPv4 and IPv6 prefix suppression has been enabled for a specific interface.

Troubleshooting IPv4 and IPv6 Prefix Suppression

Procedure

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.

	Command or Action	Purpose
Step 2	debug ospfv3 lsa-generation Example: Device# debug ospfv3 lsa-generation	Displays informations about each OSPFv3 LSA that is generated.
Step 3	debug condition interface <i>interface-type</i> <i>interface-number</i> [dlci <i>dlci</i>] [vc { <i>vci</i> <i>vpi</i> <i>vci</i> }] Example: Device# debug condition interface serial 0/0	Limits output for some debug commands on the basis of the interface or virtual circuit.
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 <i>slot-number</i> summary] Example: Device# show logging	Displays the state of syslog and the contents of the standard system logging buffer.

Configuration Example: Configuring Prefix Suppression Support for OSPFv3

```
router ospfv3 1
 prefix-suppression
 !
 address-family ipv6 unicast
  router-id 0.0.0.6
 exit-address-family
```

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

```
router ospfv3 1
 !
 address-family ipv6 unicast
  router-id 10.0.0.6
  prefix-suppression
 exit-address-family
```

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

```
interface Ethernet0/0
 ip address 10.0.0.1 255.255.255.0
 ipv6 address 2001:201::201/64
```

```
ipv6 enable
ospfv3 prefix-suppression
ospfv3 1 ipv4 area 0
ospfv3 1 ipv6 area 0
end
```

Feature History for Prefix Suppression Support for OSPFv3

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	Prefix Suppression Support for OSPFv3	Prefix Suppression Support for OSPFv3 feature enables Open Shortest Path First version 3 (OSPFv3) to hide the IPv4 and IPv6 prefixes of connected networks from link-state advertisements (LSAs).
Cisco IOS XE Cupertino 17.7.1	Prefix Suppression Support for OSPFv3	Support for this feature was introduced on the Cisco Catalyst 9600 Series Supervisor 2 Module.

Use the Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>.

