



# OSPF Flooding Reduction

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## Feature Overview

The explosive growth of the Internet has placed the focus on the scalability of Interior Gateway Protocols such as OSPF. The networks using OSPF are becoming larger every day and will continue to expand to accommodate the demand to connect to the Internet.

Internet Service Providers and customers with large networks have regularly complained that OSPF has a traffic overhead, even when the network topology is stable.

By design, OSPF requires link-state advertisements (LSAs) to be refreshed as they expire after 3600 sec. Some implementations have tried to improve the flooding by reducing the frequency to refresh from 30 min to around 50 min or so. This solution reduces the amount of refresh traffic but requires at least one refresh before the LSA expires.

The OSPF Flooding Reduction feature works by reducing unnecessary refreshing and flooding of already known and unchanged information. To achieve this reduction, the LSAs are now flooded with the higher bit set, thus making them DoNotAge (DNA) LSAs.

## Benefits

All OSPF customers with generally stable networks benefit from the reduced traffic overhead provided by the OSPF Flooding Reduction feature.

## Restrictions

All routers and access servers in the area must be running Cisco IOS Release 11.2 or higher or the feature will not be active.

## Related Documents

- *IP and IP Routing Configuration Guide*, Cisco IOS Release 12.1
- *IP and IP Routing Command Reference*, Cisco IOS Release 12.1

## Supported Platforms

This Cisco IOS OSPF Flooding Reduction feature is supported on the following platforms:

- Catalyst 2610
- Catalyst 5000 family switches with an installed Route Switch Module
- Catalyst 6000
- Catalyst 8510
- Cisco 1003
- Cisco 1004
- Cisco 1600 series
- Cisco 2500 series
- Cisco 2600 series
- Cisco 3600 series
- Cisco 4500 family routers
- Cisco 4700 family routers
- Cisco AS5200
- Cisco 5200 series
- Cisco AS5300
- Cisco 6400 series (NRP)
- Cisco 7000 series
- Cisco 7100 series
- Cisco 7200 series
- Cisco 7500 series with a Route Switch Module
- Cisco 12000 series
- Cisco uBR7200 series

## Configuration Tasks

See the following sections for configuration tasks for the OSPF Flooding Reduction feature.

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## Configuring OSPF Flooding Reduction

Command	Purpose
<code>Router(config-if)#ip ospf flood-reduction</code>	Reduces unnecessary flooding and refreshing of LSAs in stable networks. You must configure this feature on a per-interface basis.

## Verifying OSPF Flooding Reduction

- Step 1 Enter the **show running-config** command.
- Step 2 Verify the configuration in NVRAM.

## Monitoring and Maintaining OSPF Flooding Reduction

Command	Purpose
<code>Router# show ip ospf database</code>	Display lists of information related to the OSPF database. Should display low sequence numbers on LSAs that are not originated in the local environment.

# Configuration Examples

The following example enables OSPF flood-reduction on each interface.

```
interface serial 0
 ip address 192.42.110.201 255.255.255.0
 ip ospf flood-reduction
 ip ospf authentication-key abcdefgh
 ip ospf cost 10
!
interface serial 1
 ip address 131.119.251.201 255.255.255.0
 ip ospf flood-reduction
 ip ospf authentication-key ijklmnop
 ip ospf cost 20
 ip ospf retransmit-interval 10
 ip ospf transmit-delay 2
 ip ospf priority 4
!
interface serial 2
 ip address 131.119.254.201 255.255.255.0
 ip ospf flood-reduction
 ip ospf authentication-key abcdefgh
 ip ospf cost 10
!
interface serial 3
 ip address 36.56.0.201 255.255.0.0
 ip ospf flood-reduction
 ip ospf authentication-key ijklmnop
 ip ospf cost 20
 ip ospf dead-interval 80
```

## Command Reference

This section documents the new **ip ospf flood-reduction** command. All other commands used with this feature are documented in the Cisco IOS Release 12.1 command reference publications.

# ip ospf flood-reduction

To suppress the unnecessary flooding of link-state advertisements (LSAs) in stable topologies, use the **ip ospf flood-reduction** interface configuration command. To disable this feature, use the **no** form of this command.

**ip ospf flood-reduction**

**no ip ospf flood-reduction**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Disabled

**Command Modes** Interface configuration

Release	Modification
12.1(2)T	This command was introduced.

**Usage Guidelines** All routers supporting the OSPF demand circuit are compatible and can interact with routers supporting flooding reduction.

**Examples** The following example reduces the flooding of unnecessary LSAs on serial interface 0:

```
interface serial 0
 ip ospf flood-reduction
```

Command	Description
<b>show ip ospf interface</b>	Display OSPF-related interface information.
<b>show ip ospf neighbor</b>	Display OSPF-neighbor information on a per-interface basis.

# Glossary

**DoNotAge (DNA)**—The DoNotAge bit is the most significant bit of the LS Age field. LSAs having the DoNotAge bit set are not aged as they are in the OSPF router's link-state database, which means that these LSAs do not have to be refreshed every 30 minutes.

**link-state advertisement (LSA)**—Broadcast packet used by link-state protocols that contains information about neighbors and path costs. LSAs are used by the receiving routers to maintain their routing tables.