



Enabling Enhanced IS-IS Fast Flooding of LSPs

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Overview

This chapter introduces the Enhanced IS-IS Fast Flooding feature. Designed to increase the rate of LSP flooding, it enables quicker network adaptation to topology changes and reduces convergence times.

Unlike the standard LSP flooding mechanisms, this feature is not enabled by default and offers a configurable environment to efficiently manage LSP transmission rates.

Restrictions

- The feature must be manually enabled as it is not active by default.

Information About Enabling Enhanced IS-IS Fast Flooding of LSPs

Enabling Enhanced IS-IS Fast Flooding of LSPs

The IS-IS LSP Fast Flooding feature is designed to optimize the transmission of Link State Packets (LSPs) within an IS-IS domain. By increasing the flooding rate of LSPs, this feature allows for faster dissemination of topology information, facilitating quicker network convergence in response to changes.

Administrators can configure the feature to send LSPs in bursts, targeting a default rate of 1000 LSPs per second, significantly higher than the rate achieved with standard settings. The feature dynamically adjusts the

sending rate based on the neighbor's ability to process and acknowledge the LSPs, ensuring efficient communication and preventing overloading.

While standard IS-IS flooding operates on a fixed timer, the Fast Flooding feature introduces flexibility and control, with several configurable parameters available through CLI commands. This includes settings for the local PSNP interval and the maximum flooding rate, which can be adjusted according to network requirements.

The Fast Flooding feature is inactive by default, providing network operators the choice to enable it selectively where the network infrastructure will benefit from enhanced LSP flooding capabilities. This selective activation is crucial for maintaining optimal performance across various network topologies and conditions.

Adaptive Flooding Rate Adjustment

The Enhanced IS-IS Fast Flooding feature includes an intelligent mechanism for adapting the LSP flooding rate in real-time. This dynamic adjustment is based on continuous monitoring of the acknowledgment rates (PSNP receipt) from neighboring routers. When the feature detects delays in acknowledgment, it automatically reduces the flooding rate to prevent overloading the neighbor's processing capabilities. Conversely, if acknowledgments are received promptly, the feature may increase the flooding rate up to the configured maximum, optimizing the speed of topology dissemination.

This adaptive approach ensures that the feature responds appropriately to the operational conditions of the network, providing an optimal balance between fast convergence and network stability. Network administrators can use this information to fine-tune the feature's parameters, ensuring that the flooding rate is both efficient and sustainable.

How to Configure Enhanced IS-IS Fast Flooding of LSPs

Configure the Enhanced IS-IS Fast Flooding feature using the following CLI commands:

SUMMARY STEPS

- `enable`
- `configure terminal`
- `router isis 1 lsp-fastflooding`
- `router isis 1 lsp-fastflooding max-lsp-tx 2000`
- `router isis 1 lsp-fastflooding remotepsnp-delay 500`
- `router isis 1 psnpinterval 2000`
- `interface GigabitEthernet 0/0/0 isis remote-psnpdelay 400`
- `end`

DETAILED STEPS

Procedure		
	Command or Action	Purpose
Step 1	<code>enable</code>	Enables privileged EXEC mode.
	Example:	
		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 isis 1 lsp-fastflooding Example: Device# configure terminal Device(config)# router isis 1 Device(configrouter)# lspfast-flooding	Activates the fast flooding feature for the IS-IS process.
Step 4	router isis 1 lsp-fastflooding max-lsp-tx 2000 Example: Device(configrouter)# lspfast-flooding max-lsp-tx 2000	(Optional) Configures the maximum rate at which LSPs are sent, in this case, 2000 LSPs per second.
Step 5	router isis 1 lsp-fastflooding remotepsnp-delay 500 Example: Device(configrouter)# lspfast-flooding remote-psnp-delay 500	(Optional) Specifies the delay, in milliseconds, that the router expects a PSNP acknowledgment from neighbors after sending an LSP. Here, it is set to 500 milliseconds.
Step 6	router isis 1 psnpinterval 2000 Example: Device(configrouter)# psnpinterval 2000	(Optional) Sets the interval at which PSNPs are sent. This configuration increases the interval to 2000 milliseconds.
Step 7	interface GigabitEthernet 0/0/0 isis remote-psnpdelay 400 Example: Device(config)# interface GigabitEthernet0/0/0 Device(configif)# isis remotepsnp-delay 400	(Optional) Overrides the default or global remote PSNP delay for a specific interface, such as GigabitEthernet0/0/0, with a custom value of 400 milliseconds.
Step 8	end Example: Router(configrouter)# end	Returns to privileged EXEC mode.

Configuration Examples for Enabling Enhanced IS-IS Fast Flooding

The examples provided above demonstrate how to enable the Enhanced ISIS Fast Flooding feature and customise further options to manage the feature effectively.

To enable the IS-IS Fast Flooding feature on your device, enter the following commands:

```
Device# configure terminal
Device(config)# router isis 1
Device(config-router)# lsp-fast-flooding
Device(config-isis-fspeed)#?
ISIS flood speed configuration commands:
default                Set a command to its defaults
exit-lsp-fast-flooding Exit from LSP Fast Flooding mode
max-lsp-tx             Maximum LSP Transmit Rate in LSP/Sec
no                     Negate a command or set its defaults
remote-psnp-delay      Remote PSNP delay
Device(config-isis-fspeed)#
```

Configure the router to send LSPs at a maximum rate of 2000 LSPs per second by using the following commands:

```
Device# configure terminal
Device(config)# router isis 1
Device(config-router)# lsp-fast-flooding
Device(config-router)# lsp-fast-flooding max-lsp-tx 2000
Device(config-router)# exit
```

Specify the PSNP acknowledgment delay to 500 milliseconds with these commands:

```
Device# configure terminal
Device(config)# router isis 1
Device(config-router)# lsp-fast-flooding
Device(config-router)# lsp-fast-flooding remote-psnp-delay 500
Device(config-router)# exit
```

Set the PSNP interval timer to 2000 milliseconds as shown below:

```
Device# configure terminal
Device(config)# router isis 1
Device(config-router)# lsp-fast-flooding
Device(config-isis-fspeed)# max-lsp-tx 2000
Device(config-isis-fspeed)# exit
Device#
```

Override the global PSNP delay with an interface-specific value on GigabitEthernet0/0/0:

```
Device# configure terminal
Device(config)# interface GigabitEthernet0/0/0
Device(config-if)# isis remote-psnp-delay 400
Device(config-if)# exit
```

Feature Information for Enabling Enhanced IS-IS Fast Flooding of LSPs

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <https://cfnng.cisco.com/>. An account on Cisco.com is not required.

Table 1: Table 1. Feature Information for Enabling Enhanced IS-IS Fast Flooding of LSPs

Feature Name	Releases	Feature Information
Enabling Enhanced IS-IS Fast Flooding of LSPs	Cisco IOS XE 17.14.1a	The Enhanced IS-IS Fast Flooding of LSPs feature accelerates network convergence by improving the speed at which Link State Packets (LSPs) are spread across an IS-IS network. This is accomplished by adjusting the LSP transmission rate to match the receiving routers' capabilities, ensuring efficient and rapid dissemination of network topology information. Implemented from Cisco IOS XE 17.14.1a onwards, this feature is configured with the router isis lsp-fast-flooding command. For more precise control, options such as max-lsp-tx, psnp-interval, and per-interface settings are available within the router isis configuration. The isis remote-psnp-delay command further enhances LSP flooding customization. By default, this feature is off and requires manual activation. Once enabled, it provides quicker network response to changes, promoting high network availability and robustness.

