OSPFv2 IP FRR Local Microloop Avoidance

The OSPFv2 IP FRR Local Microloop Avoidance feature helps to avoid local microloop that happens between a node and its neighbor where the link-down event occurred. This document explains how to configure the OSPFv2 IP FRR Local Microloop Avoidance feature.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Information About OSPFv2 IP FRR Local Microloop Avoidance

Overview of OSPFv2 IP FRR Local Microloop Avoidance

IP fast reroute (IPFRR) provides rapid convergence during the link-down events by moving the traffic to a pre computed backup path until the regular convergence mechanisms move the traffic to the newly found best path referred to as the post-convergence path.

Once the traffic is moved to the post-convergence path, it is inclined to a microloop. Microloops are formed as a result of the fact that each node on the path does its calculation at different times and independently of other nodes. If certain nodes converge and sends traffic to a neighbor node, which has not converged yet, traffic may be looped between these two nodes.

Microloops are formed between the router where the failure is detected and its neighbors. Local microloops are created in cases where there is no local loop-free alternate (LFA) backup available in ring or square topologies. In such topologies, remote LFA provides a backup, but the fast-convergence benefit of the remote LFA cannot be completely utilized due to the high probability of the local microloop creation. Avoiding the local micro loop provides a significant improvement in the fast convergence in the ring and square topologies.

Note   Microloop avoidance is automatically enabled as soon as remote LFA (rLFA) is enabled.

When using microloop avoidance for prefixes (for which a repair path has been installed in the forwarding plane), the OSPFv2 IP FRR Local Microloop Avoidance feature is enabled when the forwarding plane is triggered to switch to using a pre installed repair path. The local microloop avoidance for the link-down event supports the following triggers:

- Interface down event.
- Adjacency down event due to the Bidirectional Forwarding Detection (BFD) session down.

If microloop avoidance is used regardless of whether a repair path has been installed in the forwarding plane, then in addition the third trigger is used:

- Adjacency down event due to neighbor hold time expiration.

When the neighbor reports loss of adjacency to the local system in its link state neighbor advertisements, the value of using microloop avoidance depends on whether the remote event that caused loss of adjacency on the neighbor is detectable by the local forwarding plane (that is, whether the forwarding plane will react and switch to using pre programmed repair paths).

How to Configure OSPFv2 IP FRR Local Microloop Avoidance

Configuring OSPFv2 IP FRR Local Microloop Avoidance

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **router ospf** *process-id*
4. **microloop avoidance** [**protected** | **disable**]
5. **microloop avoidance rib-update-delay** *delay-period*
6. **exit**

DETAILED STEPS

	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	**router ospf** *process-id* **Example:** `Device(config)# router ospf 109`	Configures an OSPF routing process and enters router configuration mode.
Step 4	**microloop avoidance** [**protected** | **disable**] **Example:** `Device(config-router)#  microloop avoidance protected`	Configures the local microloop avoidance between a node and its neighbor where the link-down event has occurred. • When the **protected** keyword is used, the local microloop avoidance is only applied to prefixes that have a valid backup path. • When the **disable** keyword is used, the local microloop avoidance is disabled if it is enabled automatically earlier.
Step 5	**microloop avoidance rib-update-delay** *delay-period* **Example:** `Device(config-router)#  microloop avoidance rib-update-delay 6500`	Delays the local microloop avoidance as per the configured delay period.
Step 6	**exit** **Example:** `Device(config-router)# exit`	Exits router configuration mode and returns to privileged EXEC mode.

Configuration Examples for OSPFv2 IP FRR Local Microloop Avoidance

Example: Configuring OSPFv2 IP FRR Local Microloop Avoidance

```
router ospf 10
 microloop avoidance protected
microloop avoidance rib-update-delay 6500
 !
```

Additional References for OSPFv2 IP FRR Local Microloop Avoidance

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
Configuring OSPF features	IP Routing: OSPF Configuration Guide

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

Feature Information for OSPFv2 IP FRR Local Microloop Avoidance

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.

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Table 1: Feature Information for OSPFv2 IP FRR Local Microloop Avoidance

Feature Name	Releases	Feature Information
OSPFv2 IP FRR Local Microloop Avoidance	Cisco IOS XE Release 3.11S 15.4(1)S	The OSPFv2 IP FRR Local Microloop Avoidance feature helps to avoid local microloop that happens between a node and its neighbor where the link-down event occurred. The following commands were introduced or modified: **microloop avoidance**, **microloop avoidance rib-update-delay**.