



OSPFv3 Dynamic Interface Cost Support

The Open Shortest Path First version 3 (OSPFv3) Dynamic Interface Cost Support feature provides enhancements to the OSPFv3 cost metric in Mobile Ad Hoc Network (MANET) environments. This feature enables the route cost to a neighbor to be dynamically updated based on metrics reported by the radio, allows the best route to be chosen within a given set of radio links, and reduces the effect of frequent routing changes.

- [Finding Feature Information, on page 1](#)
- [Information About OSPFv3 Dynamic Interface Cost Support, on page 1](#)
- [Additional References, on page 3](#)
- [Feature Information for OSPFv3 Dynamic Interface Cost Support, on page 3](#)

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 OSPFv3 Dynamic Interface Cost Support

Link-Quality Metrics Reporting for OSPFv3

The quality of a radio link has a direct impact on the throughput that can be achieved by device-to-device traffic. The PPP over Ethernet (PPPoE) provides a process by which a device can request, or a radio can report, link-quality metric information. With the Cisco Open Shortest Path First version 3 (OSPFv3) implementation, the route cost to a neighbor is dynamically updated based on metrics reported by the radio, thus allowing the best route to be chosen within a given set of radio links and reducing the effect of frequent routing changes.

The routing protocols receive raw radio-link data and compute a composite quality metric for each link. In computing these metrics, you should consider these factors:

- Maximum data rate—the theoretical maximum data rate of the radio link, in scaled bits per second
- Current data rate—the current data rate achieved on the link, in scaled bits per second

- Resources—a percentage (0 to 100) that can represent the remaining amount of a resource (such as battery power)
- Latency—the transmission delay packets encounter, in milliseconds
- Relative link quality—a numeric value (0 to 100) representing relative quality, with 100 being the highest quality

Each Layer 2 feedback can contribute a cost in the range of 0 to 65535. To tune down this cost range, use the optional **weight** keyword with the **throughput**, **resources**, **latency**, or **L2-factor** keyword. Each of these weights has a default value of 100 percent and can be configured in the range from 0 to 100. When 0 is configured for a specific weight, that weight does not contribute to the OSPF cost.

You can weight metrics during the configuration process to emphasize or deemphasize particular characteristics. For example, if throughput is a particular concern, you can weight the *throughput* metric so that it is factored more heavily into the composite route cost. Similarly, a metric of no concern can be omitted from the composite calculation.

Because cost components can change rapidly, you might need to dampen the number of changes to reduce network-wide churn. Use the optional **hysteresis** keyword with the **threshold** *threshold-value* keyword and argument to set a cost change threshold. Any cost change below this threshold is ignored.

Link metrics can change rapidly, often by very small degrees, which can result in a flood of meaningless routing updates. In a worst-case scenario, the network could churn almost continuously as it struggles to react to minor variations in link quality. To alleviate this concern, Cisco provides a tunable dampening mechanism that allows you to configure threshold values. Any metric change that falls below the threshold is ignored. The quality of a connection to a neighbor varies, based on various characteristics of the interface when OSPFv3 is used as the routing protocol. The routing protocol receives dynamic raw radio-link characteristics and computes a composite metric that is used to reduce the effect of frequent routing changes.

By using the tunable hysteresis mechanism, you can adjust the threshold to the routing changes that occur when the device receives a signal that a new peer has been discovered or that an existing peer is unreachable. The tunable metric is weighted and is adjusted dynamically to account for these characteristics:

- Current and maximum bandwidth
- Latency
- Resources
- Relative link quality (RLQ)

You can deconfigure individual weights, and you can clear all weights so that the cost returns to the default value for the interface type. Based on the routing changes that occur, you can determine the cost by applying these metrics. For more information about the **ipv6 ospf cost** command, see the *Cisco IOS IPv6 Command Reference*.

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
Open Shortest Path First (OSPF) commands	Cisco IOS IP Routing: OSPF Command Reference
IPv6 commands	Cisco IOS IPv6 Command Reference

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for OSPFv3 Dynamic Interface Cost Support

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 OSPFv3 Dynamic Interface Cost Support

Feature Name	Releases	Feature Information
OSPFv3 Dynamic Interface Cost Support	12.4(15)XF 12.4(15)T 15.0(1)M	OSPFv3 Dynamic Interface Cost Support provides enhancements to the Open Shortest Path First version 3 (OSPFv3) cost metric for supporting Mobile Ad Hoc Networks (MANETs). The following commands were introduced or modified: debug ipv6 ospf l2api, ipv6 ospf cost, test ospfv3 interface.