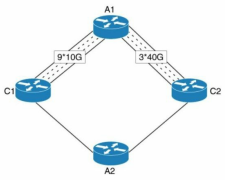

CISCO UCMP ISIS Local Unequal Cost Multipath User Guide

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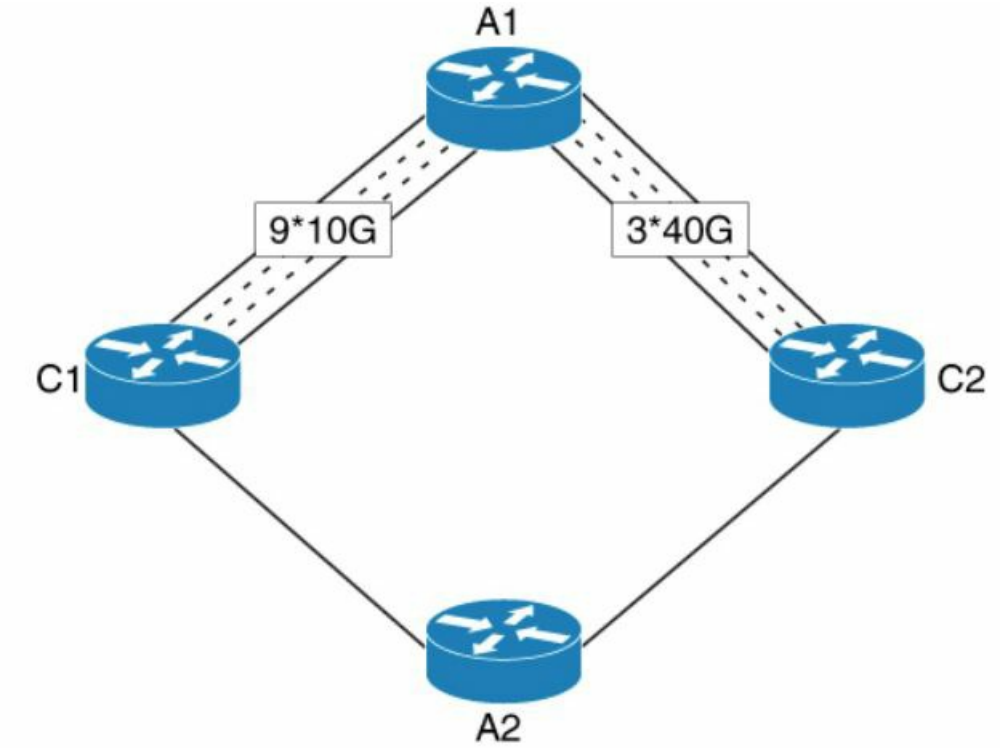


Product Information

Specifications

- **Feature Name:** Segment Routing–IS-IS UCMP
- **Releases:** Cisco IOS XE 17.5.1
- **Feature Information:** The Segment Routing–IS-IS UCMP feature allows you to load balance outgoing traffic across all IGP ECMP paths proportionally to the interface bandwidth.

Product Usage Instructions

Configuring the Cisco ISIS Local Unequal Cost Multipath (UCMP)

To configure the Cisco ISIS Local Unequal Cost Multipath (UCMP), perform the following tasks:

1. Use the command `router isis ucmp local [prefix-list]` to configure the ucmp local.
2. Use the command `router isis address-family ipv6 ucmp local [prefix-list]` to configure the ucmp local for IPv6.

Verifying the Unequal Cost Multi Path (UCMP) Local

To verify the Unequal Cost Multi Path (UCMP) Local, you can use the following show commands:

- `show ip route [destination]`: This command displays the routing entry for the specified destination, including information such as the known via isis, distance, metric, type, and routing descriptor blocks.
- `show interface [interface] counters`: This command shows the interface counters, including InOctets, InUcastPkts, InMcastPkts, InBcastPkts, OutOctets, OutUcastPkts, OutMcastPkts, and OutBcastPkts.

Frequently Asked Questions (FAQ)

- **What does the Unequal Cost Multi Path (UCMP) Local feature do?**

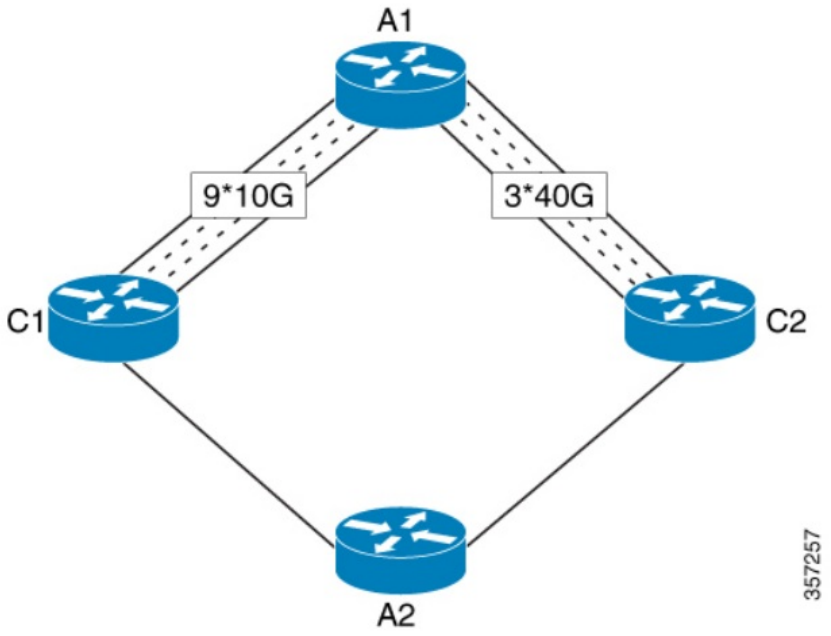
The UCMP Local feature allows you to load balance outgoing traffic across all IGP ECMP paths proportionally to the interface bandwidth.

- **How can I configure the Cisco ISIS Local Unequal Cost Multipath (UCMP)?**
  To configure the Cisco ISIS Local Unequal Cost Multipath (UCMP), follow the instructions provided in the user manual. Perform the tasks mentioned in the “Configuring the Cisco ISIS Local Unequal Cost Multipath (UCMP)” section.
- **How can I verify the Unequal Cost Multi Path (UCMP) Local?**
  To verify the Unequal Cost Multi Path (UCMP) Local, use the show commands mentioned in the “Verifying the Unequal Cost Multi Path (UCMP) Local” section of the user manual.

INTRODUCTION

- The Cisco IOS XE ISIS Local UCMP feature allows you to load balance traffic from A1 to A2, across all the links from A1-C1 and A1-C2 in a network. When you configure equal metrics on all the links, it will create Equal Cost Multipath (ECMP) paths. However, the higher bandwidth links will carry the same traffic as the lower bandwidth links and the higher bandwidth links are underutilized. To avoid this problem, you can configure all the links to distribute the traffic proportionately across the links based on bandwidth, even if the configured metrics on all links are the same.
- The following figure explains the topology:

Figure 1: Local Unequal Cost Multipath Topology



Configuring the Unequal Cost Multi Path (UCMP) Local

Perform the following task to configure the ucmp local:

- **router isis**

ucmp local [prefix-list <prefix-list-name>]

- **router isis**

  address-family ipv6 ucmp local [prefix-list <prefix-list-name>]

Verifying the Unequal Cost Multi Path (UCMP) Local

To verify the feature, use the following show commands:

- show interface counters
- show ip route
- show ipv6 route
- show ip cef
- show mpls forwarding-table labels detail
- show mpls infrastructure lfd lte

Examples: Show Commands

- The following is a sample output from the show ip route of the Unequal Cost Multi Path (UCMP) Local:

```
Device#show ip route 10.138.1.3
Routing entry for 10.138.1.0/24
Known via "isis", distance 115, metric 50, type level-1
Redistributing via isis Ring#1
Advertised by isis Ring#1 (self originated)
Last update from 10.148.1.1on FortyGigabitEthernet0/5/1, 00:24:51
ago
Routing Descriptor Blocks:
* 10.198.1.1, from 10.1.1.1, 00:24:51 ago, via GigabitEthernet0/0/0
 Route metric is 50, traffic share count is 6
 10.148.1.1, from 10.1.1.1, 00:24:51 ago, via
FortyGigabitEthernet0/5/1
 Route metric is 50, traffic share count is 25
```

- Note You should verify if the traffic share count is computed according to the interface bandwidth.
- The following is a sample output from show interface counter of the Unequal Cost MultiPath (UCMP) Local:

```
Device#show interface fo0/5/1 counters
Port      InOctets   InUcastPkts InMcastPkts InBcastPkts
Fo0/5/1    22883         0           17           0
Port      OutOctets  OutUcastPkts OutMcastPkts OutBcastPkts
Fo0/5/1   16242883     57513        17           0
PE12#show interface gi0/0/0 counters
Port      InOctets  InUcastPkts InMcastPkts InBcastPkts
Gi0/0/0    26388        26           19           0
Port      OutOctets  OutUcastPkts  OutMcastPkts OutBcastPkts
Gi0/0/0    81944464    264216       195          0
```

Note You can verify if the outgoing traffic is split according to the computed traffic share count.

Debug Commands

To troubleshoot the issues related to local UCMP, use the following debug commands:

- debug isis mfi
- debug ip routing detail
- debug ipv6 routing

Feature Information for Segment Routing—IS-IS UCMP

- 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 www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for Segment Routing—IS-IS UCMP

Feature Name	Releases	Feature Information
Segment Routing—IS-IS UCMP	Cisco IOS XE 17.5.1	The Segment Routing—IS-IS UCMP feature allows you to load balance outgoing traffic across all IGP ECMP paths proportionally to the interface bandwidth.