



# ECMP Loadbalance with Tunnel Visibility

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ECMP Loadbalance with Tunnel Visibility feature allows per-flow load balancing in Service Provider (SP) routers to identify packets with the same source and destination IP address to an active path.

- [Finding Feature Information, page 1](#)
- [Prerequisites for ECMP Loadbalance with Tunnel Visibility, page 1](#)
- [Restrictions for ECMP Loadbalance with Tunnel Visibility, page 2](#)
- [Information About ECMP Loadbalance with Tunnel Visibility, page 2](#)
- [How to Configure ECMP Loadbalance with Tunnel Visibility, page 2](#)
- [Configuration Examples for ECMP Loadbalance with Tunnel Visibility, page 3](#)
- [Additional References, page 3](#)
- [Feature Information for ECMP Loadbalance with Tunnel Visibility, page 4](#)

## 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 at the end of this module.

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Prerequisites for ECMP Loadbalance with Tunnel Visibility

- Enable entropy label feature to compute hashing in Layer 2 Virtual Private Networks (L2VPN) core network.

## Restrictions for ECMP Loadbalance with Tunnel Visibility

- Deep Packet Inspection (DPI) for flow-label in IPv6 is not supported.
- DPI is not supported for fragment traffics.

## Information About ECMP Loadbalance with Tunnel Visibility

### Equal Cost Multiple Paths (ECMP)

ECMP is a set of output paths with an equal cost form the set of active paths.

### Load Balancing

Load balancing is a functionality in a router that distributes packets across multiple links based on layer 3 routing information. If a router discovers multiple paths to a destination the routing table is updated with multiple entries for that destination. It has the ability to share the traffic to the destination IP prefix over ECMP paths.

### ECMP Loadbalance with Tunnel Visibility

ECMP Loadbalance with Tunnel Visibility allows five types of tunnel encapsulations: GRE, IPsec, IPinIP, VxLAN, and L2TP. The tunnel encapsulations will be deeply inspected by Cisco Express Forwarding (CEF). After DPI, different protocol fields will be taken into account when making load balancing decisions, like SPI for IPsec tunnel, or Session id for L2TP tunnel.

## How to Configure ECMP Loadbalance with Tunnel Visibility

### Configuring ECMP Loadbalance with Tunnel Visibility

```
enable
configure terminal
ip cef load-sharing key-control dpi
ipv6 cef load-sharing algorithm dpi
end
```

# Configuration Examples for ECMP Loadbalance with Tunnel Visibility

## Example: ECMP Loadbalance with Tunnel Visibility

```
ip cef load-sharing algorithm dpi tunnel-gre tunnel-l2tp tunnel-ipsec tunnel-ipinip
tunnel-vxlan l2vpn-mac
ip cef load-sharing key-control dpi tunnel-gre outer-src-dst-ip inner-src-dst-ip
inner-src-dst-port
ip cef load-sharing key-control dpi tunnel-l2tp outer-src-dst-ip outer-src-dst-port
inner-src-dst-ip inner-src-dst-port
ip cef load-sharing key-control dpi tunnel-ipsec outer-src-dst-ip
ip cef load-sharing key-control dpi tunnel-ipinip outer-src-dst-ip inner-src-dst-ip
inner-src-dst-port
ip cef load-sharing key-control dpi tunnel-vxlan outer-src-dst-ip outer-src-dst-port
inner-src-dst-mac inner-vlan 3
ip cef load-sharing key-control dpi l2vpn-mac outer-src-dst-mac outer-vlan 3 outer-src-dst-ip
outer-src-dst-port inner-src-dst-mac inner-vlan 3 inner-src-dst-ip inner-src-dst-port
```

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>

### MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

**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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for ECMP Loadbalance with Tunnel Visibility

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 ECMP Loadbalance with Tunnel Visibility**

Feature Name	Releases	Feature Information
ECMP Loadbalance with Tunnel Visibility	Cisco IOS XE Denali 16.3.1.	<p>This feature is introduced on Cisco 4300, 4400, ASR1000, platforms. ECMP loadbalance with tunnel visibility feature allows per-flow load balancing in Service Provider (SP) routers to identify packets with the same source and destination IP address to an active path.</p> <p>The following commands were modified: ip cef load-sharing key-control dpi .</p>