



## L2CP Tunneling MEF

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This chapter introduces you to L2 Control Protocols (L2CP) tunneling to help initiate control packets from a local (customer-edge) CE device to a remote CE device.

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## L2CP Tunneling

The router supports the following tunnel protocols:

- Link Layer Discovery Protocol (LLDP)
- Link Aggregation Control Protocol (LACP)
- Operation, Administration, Management (OAM)
- Ethernet Local Management Interface (ELMI)
- Cisco Discovery Protocol (CDP)

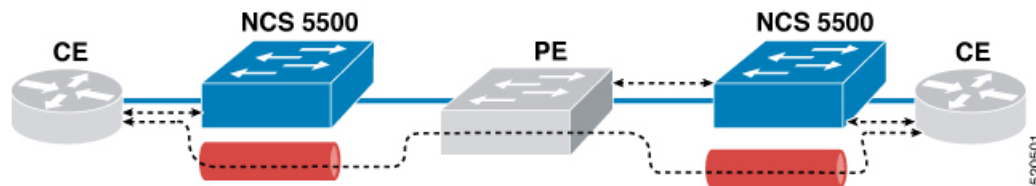
On a subinterface, when control packets such as LLDP and LACP are tunneled, the system tunnels the same control packets to the main interface.

The LACP packet for VPLS (also known as ELAN service) either gets peered or dropped.

The router tunnels Layer 2 packets between CEs. The Cisco multicast address (01-00-0c-cd-cd-d0) is used to tunnel the packets over the Network-to-Network Interface (NNI).

The following figure depicts Layer 2 protocol tunneling. The Layer 2 traffic is sent through the Cisco NCS 5500 Series Routers, and these routers switch the traffic from end to end. The Cisco multicast address is added to the frames and sent from User-Network Interface (UNI) to NNI. A protocol-specific multicast address is added to the frames and sent from NNI to UNI (depicted as a dotted line).

Figure 1: L2CP Tunneling



### Restrictions

- VPLS service does not support LACP tunneling.
- VPWS and EVPN-VPWS services support LACP tunneling.

## L2CP Protocol Support on Cisco NCS 5500 Series Router

The router supports Layer 2 peering functionalities on a per Ethernet Flow Point (EFP) basis. It supports maximum packet rate of 10 packets ps (per interface) for a protocol, and 100 packets ps for all protocols (on all interfaces).

You do not need to configure L2CP tunneling explicitly. L2CP packets are tunneled over Layer 2 tunnel by default.

The following table lists the options that are supported on the router and displays the supported defaults and configuration options for the router.

| Protocol | Packet Type | Action             |
|----------|-------------|--------------------|
| CDP      | Untagged    | Peer               |
| LACP     | Untagged    | Peer               |
| LLDP     | Untagged    | Peer else Tunneled |
| STP      | Untagged    | Peer               |
| VTP      | Untagged    | Peer               |
| OAM      | Untagged    | Peer               |
| BPDU     | Untagged    | Tunneled           |
| UDLD     | Untagged    | Peer               |
| CDP      | Tagged      | Tunneled           |
| LACP     | Tagged      | Tunneled           |
| LLDP     | Tagged      | Tunneled           |
| STP      | Tagged      | Tunneled           |
| VTP      | Tagged      | Tunneled           |

| Protocol | Packet Type | Action   |
|----------|-------------|----------|
| BPDU     | Tagged      | Tunneled |
| OAM      | Tagged      | Tunneled |
| ELMI     | Tagged      | Tunneled |
| UDLD     | Tagged      | Peer     |

The following table lists the supported options on the router and displays the supported defaults and configuration options for the Cisco NCS 5700 series line cards.

**Table 1: L2CP Protocol Support on Cisco NCS 5700 Series Line Cards**

| Protocol    | Services and Action on NC57 Line cards |        |         |         |               |               |               |                     |
|-------------|--|--------|---------|---------|---------------|---------------|---------------|---------------------|
|             | EPL1                                   | EPL2   | ELAN    | E-Tree  | EVPL1         | EVLAN         | EVTREE        | Enable on Interface |
| STP         | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | Tunnel        | Tunnel        | Tunnel        | Not supported       |
| RSTP        | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | Tunnel        | Tunnel        | Tunnel        | Not supported       |
| LACP /LAMP  | Tunnel                                 | Tunnel | Discard | Discard | Discard       | Discard       | Discard       | Punt                |
| LOAM        | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | NA            | NA            | NA            | Drop                |
| E-LMI       | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | Tunnel        | Tunnel        | Tunnel        | Punt                |
| LLDP        | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | Tunnel        | Tunnel        | Tunnel        | Punt                |
| PTP         | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | Tunnel        | Tunnel        | Tunnel        | Punt                |
| ESMC /SynCE | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | NA            | NA            | NA            | Not supported       |
| CDP         | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | NA            | NA            | NA            | Punt                |
| MACSEC      | Tunnel                                 | Tunnel | Tunnel  | Tunnel  | Not supported | Not supported | Not supported | Punt-not supported  |
| UDLD        | Drop                                   | Drop   | Drop    | Drop    | NA            | NA            | NA            | Punt                |



**Note** L2CP protocols over BVI is not supported.

L2CP protocol on NC57 line cards is supported from Release 7.6.1.

# MEF Compliant L2CP Tunneling Services