



# L2VPN Over Port-Channel

The Layer 2 VPN (L2VPN) over port-channel feature supports IEEE 802.1Q (dot1q) L2VPN WAN interface port-channel. Using this feature, you can configure the dot1q L2VPN traffic to pass through port-channel uplink

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## Information About L2VPN Over Port-Channel

The Cisco cBR-8 supports L2VPN, where the Ethernet frames from the cable modem are cross connected to a specific VLAN interface. The VLAN ID to be inserted is specified. With the L2VPN over port-channel feature, you can now support port-channel uplink interface as well as the 10 Gb uplink interface.

## TLS L2VPN

For the Transparent LAN Service (TLS) L2VPN, the dot1q maps contain the cable modem MAC address, the VLAN ID, and the outbound interface. Traffic received from a specific cable modem is tagged with a VLAN ID and is sent out from the uplink interface.

## DOCSIS L2VPN

For the Data-over-Cable Service Interface Specifications (DOCSIS) L2VPN, cable modem (CM) configuration file holds the L2VPN encodings for both, the CM and the service flow. At the CMTS level you have to specify the default port-channel Network Side Interface (NSI). L2VPN encodings are passed by the CM to the CMTS during registration. The CMTS installs DOCSIS service flow VLAN mapping based on the information passed to it during the registration. For upstream traffic, the CMTS sends the dot1q VLAN tagged traffic out from the uplink interface. On downstream, the CMTS receives the dot1q tagged traffic from the aggregator. The CMTS replaces the VLAN header with a DOCSIS header to the corresponding service flow.

## Benefits of L2VPN Over Port-Channel

By using the dot1q L2VPN, you can utilize the port-channel interface feature instead of a single 10 Gb port.

## Restrictions for L2VPN Over Port-Channel

The CMTS dot1q L2VPN is designed to support traffic from customer premises equipment to the network or verse vice. For CMTS L2VPN NSI port, port-channel interface does not support VLAN redundancy.

## How to Configure the L2VPN Over Port-Channel

This section describes how to configure L2VPN over port-channel on the Cisco cBR-8.

### Configuring the Port-Channel Uplink Port for TLS L2VPN

For TLS L2VPN, you must configure the overall enable CLI and the dot1q map. In dot1q map, you have to designate the port-channel uplink port.

To configure the port-channel uplink port for TLS L2VPN, complete the following procedure:

```
cable l2-vpn-service xconnect nsi dot1q
cable dot1q-vc-map mac address port-channel number vlan id custom name
```

### Configuring the Port-Channel Uplink Port for DOCSIS L2VPN

For DOCSIS L2VPN, you only have to configure the overall enable CLI with port-channel uplink port. The other L2VPN related parameters are setup by the CM configuration file type-length-value parsing.

To configure the port-channel uplink port for DOCSIS L2VPN, complete the following procedure:

```
configure terminal
cable l2-vpn-service xconnect nsi dot1q interface port-channel number
```

## Verifying Port-Channel Configuration

### Verify the Port-Channel Mapping

To verify the port-channel mapping, use the **show cable l2-vpn xconnect dot1q-vc-map** command as shown in the example below:

```
show cable l2-vpn xconnect dot1q-vc-map
```

```
MAC Address      Ethernet Interface      VLAN ID  Cable Intf  SID  Customer Name/VPNID
c8fb.26a5.551c  Port-channel164        1200    Cable6/0/0  17   Topgun
```

### View the Port-Channel Interface

To view the port-channel interface, use the **show cable l2-vpn xconnect dot1q-vc-map verbose** command as shown in the example below:

```
show cable l2-vpn xconnect dot1q-vc-map c8fb.26a5.551c verbose
```

```
MAC Address           : c8fb.26a5.551c
Customer Name         : ats
Prim Sid              : 17
Cable Interface       : Cable6/0/0
Ethernet Interface    : Port-channel164
DOT1Q VLAN ID        : 1200
Total US pkts         : 189
Total US bytes        : 18200
Total DS pkts         : 615
Total DS bytes        : 39360
```

## Feature Information for L2VPN Over Port-Channel

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

**Table 1: Feature Information for L2VPN Over Port-Channel**

Feature Name	Releases	Feature Information
L2VPN Over Port-Channel	Cisco IOS-XE Release 3.18.0S	This feature was introduced on Cisco cBR Series Converged Broadband Routers.

