

# Understanding and Configuring DLSw and 802.1Q

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## Introduction

This document describes the technique for a Data Link Switching (DLSw) router sending Per VLAN Spanning Tree (PVST+) Bridge Protocol Data Unit (BPDU) frames to a non-trunk port of an Ethernet switch.

## Before You Begin

### Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

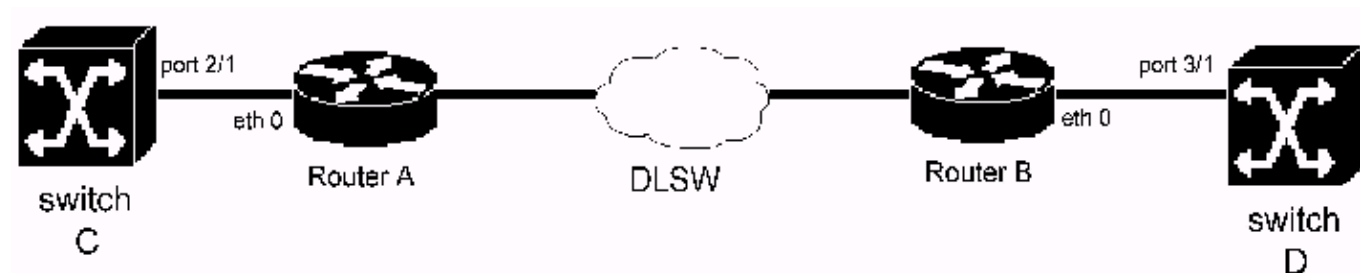
### Prerequisites

There are no specific prerequisites for this document.

### Components Used

This document is not restricted to specific software and hardware versions.

## Problem



In the above topology, ethernet 0 of Router A connects to port 2/1 on Switch C. Ethernet 0 of Router B

connects to port 3/1 on Switch D. Interface ethernet 0 of both Router A and B is configured as a non-trunk port. DLSw is enabled on interface ethernet 0 of both Router A and B (transparent bridging is enabled on ethernet interface 0 of both Router A and B.) Router A and B form a DLSw peer connection.

If port 2/1 of Switch C is misconfigured as a trunk port, Switch C regularly sends out PVST+ BPDU frames to Router A. As Router A does not understand PVST+, Router A treats PVST+ BPDU frames as ordinary multicast frames. Thus, Router A sends the BPDU frames to Router B by DLSw. Similarly, Router B does not understand PVST+. When it receives PVST+ BPDU frames from Router A, it forwards the PVST+ BPDU frames to Switch D. When Switch D receives the PVST+ BPDU frames, it detects a problem (that is, Switch D receives PVST+ BPDU frames on a non-trunk port.) As a result, Switch D shuts down the port and logs %SPAN TREE-2-RX\_1QNONTRUNK: Rcvd 1Q-BPDU error messages on non-trunk port VLANs.

## Symptom

A Catalyst Ethernet switch shuts down an ethernet switch port. The switch logs %SPAN TREE-2-RX\_1QNONTRUNK: Rcvd 1Q-BPDU error messages on non-trunk port VLANs.

## Facts

A router running DLSw connects to the port that is shut down by the switch. The router sends out PVST+ BPDUs. Because a non-trunk port should not receive a PVST+ BPDU, the switch shuts down the switch port.

**Note:** This problem only occurs on DLSw Ethernet to Ethernet topologies.

## Solution(s)

The solution is to locate the misconfigured switch. The solution(s) to this problem are explained in detail below.

### Solution 1

Review the change control log. Find out if there are any switches recently installed, switches with configuration changes. Make sure that the configuration of the newly installed switch is correct.

### Solution 2

Use the Simple Network Management Protocol (SNMP) tool to compare the configurations of all switches. Search for any newly created trunk port.

### Solution 3

Perform the following steps:

1. Install an Ethernet hub on Switch D.
2. Connect a sniffer and Router B on the hub. Obtain a Sniffer trace.
3. Search for PVST+ BPDU frames whose destination MAC address is 0100.CCCC.CCCD. This can be easily achieved by a MAC address filter.
4. From the frame, determine the source MAC address. Use the bitswapping tool ( registered customers only) to bitswap the MAC address.
5. Issue the **show DLSw reachability mac ???** on Router B, where ??? is the address obtained from the bitswapping tool. The output of the **show** command will tell you the IP address of the DLSw peer.

6. Telnet to the remote DLSw router. Issue the **show bridge H.H.H** command. **H.H.H** is the source MAC address of the PVST+ BPDU frames without bitswapping, to find out how the router learns the MAC address.

## Solution 4

Shut down the DLSw peers one at a time on Router B. This can be done by either removing the dlsw remote-peer statement, shutting down WAN interfaces, disabling DLSw on remote sites, or modifying the IP routing, which causes the remote DLSw peer unreachable.

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## Related Information

- [DLSw \(Data-Link Switching\) & , DLSw+ \(Data-Link Switching Plus\) Support Pages](#)
  - [Technical Support – Cisco Systems](#)
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