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## Introduction

This document provides a sample configuration of InterSwitch Trunking (ISL trunk) between a Catalyst 1900 and a Catalyst 6500 switch running a CatOS image. The configuration is similar to other CatOS switches such as the Catalyst 5500 series switches. Relevant commands are highlighted for the configuration as well as **show** commands that help determine if the ISL trunk is functional.

## Before You Begin

### Conventions

For more information on document conventions, see the [Cisco Technical Tips Conventions](#).

### Prerequisites

Before attempting this configuration, please ensure that you meet the following prerequisites:

- understanding VLAN concepts
- understanding VLAN Trunk Protocol (VTP) concepts

### Components Used

The information in this document is based on the software versions below.

- Catalyst 1924-EN with software version (Enterprise) V9.00.05
- Catalyst 6509 running CatOS with software version 7.3(2)

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

## Background Theory

The Catalyst 1900 runs two versions of images, namely the Standard and Enterprise editions. Trunking is only supported on the Enterprise images, and it only supports ISL encapsulation and does not support 802.1q. This limits the capability of the Catalyst 1900 to form a trunk with other Catalyst switches that can support ISL trunking. Furthermore, trunking can only be configured on the two x 100 Mbps uplink ports on the Catalyst 1900. These are the last two ports on the switch normally marked Ax and Bx. You can configure up to 1005 VLANs on the Catalyst 1900 Enterprise image. The Command Line Interface (CLI) (similar to the Cisco IOS<sup>®</sup> CLI) is only available on the Enterprise image of the Catalyst 1900.

**Note:** Catalyst 4000 series switches, with Supervisor I and II, and Catalyst 2950 series switches do not support ISL trunking and cannot be connected to the Catalyst 1900. Catalyst 5500 switches support ISL on certain modules. Issue the **show port capabilities <mod/port>** command to find out whether a specific module or port supports ISL trunking.

## Configure

In this section, you are presented with the information to configure the features described in this document.

Trunking configuration can be accomplished in two ways, either through the menu or the CLI. The following example lists the configuration commands through the CLI mode:

```
Catalyst 1900 Management Console
Copyright (c) Cisco Systems, Inc. 1993-1999
All rights reserved.
Enterprise Edition Software
Ethernet Address: 00-E0-1E-87-36-C0

PCA Number: 73-2239-01
PCA Serial Number: 6510304
Model Number: WS-C1924-EN
System Serial Number: FAA0135Y00N
-----
1 user(s) now active on Management Console.

User Interface Menu

[M] Menus
[K] Command Line

Enter Selection: K

CLI session with the switch is open.
To end the CLI session, enter [Exit].
Cat1924-EN>
```

## Network Diagram

This document uses the network setup shown in the diagram below.



## Configurations

The basic steps of this configuration are as follows:

1. Configure the VTP domain name and mode (such as one of the switches should at least be operating in the VTP server and the other in VTP `client` mode). For this document, set the VTP domain name as "DOC."
2. Configure the trunking ports (go to the interface configuration and define the trunking parameters).
3. Define the appropriate VLANs on the switch operating as a VTP server.
4. Issue the appropriate **show** commands to verify the trunking operation.

There must be at least one VTP server in a domain. A VTP server can be configured on a Catalyst 6000 or a Catalyst 1900 switch. In this example, the Catalyst 6000 is configured as a VTP server, and the Catalyst 1900 is configured as a VTP client. This is because the Catalyst 6000 is more powerful than the Catalyst 1900, and therefore is better able to handle the server capabilities.

This document uses the configurations shown below:

- Catalyst 6000
- Catalyst 1924-EN

### Catalyst 6000

```
Cat6000 (enable) show config
```

```
This command shows non-default configurations only.
```

```
Use 'show config all' to show both default and non-default configurations.
```

```
.....  
  
..  
  
begin  
!  
# ***** NON-DEFAULT CONFIGURATION *****  
!  
!  
#time: Mon Nov 25 2002, 02:53:50  
!  
#version 7.3(2)  
!  
set prompt Cat6000  
!  
#!  
#vtp  
set vtp domain DOC  
set vlan 1 name default type ethernet mtu 1500 said 100001 state active  
set vlan 1002 name fddi-default type fddi mtu 1500 said 101002 state active
```

```

set vlan 1004 name fddinet-default type fddinet mtu 1500 said 101004 state active
stp ieee
set vlan 1005 name trnet-default type trbrf mtu 1500 said 101005 state active stp
ibm
set vlan 2
set vlan 1003 name token-ring-default type trcrf mtu 1500 said 101003 state active
mode srb aremaxhop 7 stemaxhop 7 backupcrf off
!
!--- Output suppressed. #module 6 : 48-port 10/100BaseTX Ethernet set trunk 6/1 desirable isl 1-1005,10
4094 !--- Output suppressed. end

```

**Note:** The trunk mode can be 802.1q or ISL. The ISL mode is used for the trunk port of the Catalyst 6000 because Catalyst 1900 supports ISL only.

## Catalyst 1924-EN

Cat1924-EN#**configure terminal**

```

!--- Setup the VTP domain name. Note that this is
!--- case sensitive and it must be identical with the domain
!--- name configured on the VTP server (Catalyst 6000). Cat1924-EN(config)#vtp domain DOC !--- To chang
VTP mode to client. There are three VTP modes supported:
!--- server, transparent, and client. Cat1924-EN(config)#vtp client !--- Set the interface up as a trunk
(this is interface Bx). Cat1924-EN(config)#int fast0/27 Cat1924-EN(config-if)#trunk desirable Cat1924-EN
run
Building configuration...
Current configuration:
!
vtp domain "DOC"
!
vtp client
!
vlan 2 name "VLAN0002" sde 100002 state Operational mtu 1500
!
!
hostname "Cat1924-EN"
!
interface Ethernet 0/27
    trunk Desirable

line console
end

```

## Verify

This section provides information you can use to confirm that your configuration is working properly.

Certain **show** commands are supported by the [Cisco CLI Analyzer \(registered customers only\)](#) , which allows you to view an analysis of **show** command output.

## Catalyst 1900

- **show vtp** - this command verifies the VTP setup, as shown in the output below.
 

```

Cat1924-EN#show vtp
VTP version: 1
Configuration revision: 0
Maximum VLANs supported locally: 1005
Number of existing VLANs: 5
VTP domain name : DOC

```

```
VTP password :
VTP operating mode : Client
VTP pruning mode : Disabled
VTP traps generation : Enabled
Configuration last modified by: 0.0.0.0 at 11-24-2002 19:41:22
```

- **show vtp statistics** - this command checks for VTP advertisements, as shown in the output below.  
Cat1924-EN#**show vtp statistics**

```
Receive Statistics Transmit Statistics
-----
Summary Adverts 4 Summary Adverts 1
Subset Adverts 3 Subset Adverts 0
Advert Requests 0 Advert Requests 3

Configuration Errors:
Revision Errors 0 !non zero values indicates non-propagation of vlan changes (ie
add/delete)
Digest Errors 0 !non zero values indicates mismatch in vtp password

VTP Pruning Statistics:

Port Join Received Join Transmitted Summary Adverts received
with no pruning support
-----
A 0 0 0
B 0 0 0
Cat1924-EN#
```

## Catalyst 6000

- **show trunk 6/1** - This command verifies the trunk configuration, as shown in the output:  
Cat6000 (enable) **show trunk 6/1**

```
* - indicates vtp domain mismatch
Port      Mode           Encapsulation  Status      Native vlan
-----
6/1      desirable     isl            trunking    1
Port      Vlans allowed on trunk
-----
6/1      1-1005,1025-4094
Port      Vlans allowed and active in management domain
-----
6/1      1-3
Port      Vlans in spanning tree forwarding state and not pruned
-----
6/1      1-3
```

- **show vtp domain** - This command verifies the VTP configuration, as shown in the output:  
Cat6000 (enable) **show vtp domain**

```
Domain Name          Domain Index VTP Version Local Mode Password
-----
DOC                  1            2            server    -

Vlan-count Max-vlan-storage Config Revision Notifications
-----
8           1023         2            disabled

Last Updater      V2 Mode Pruning PruneEligible on Vlans
-----
192.168.1.2      disabled disabled 2-1000
```

- **show vtp statistics** - This command verifies the VTP statistics, as shown in the

**output:**Cat6000 (enable) **show vtp statistics**

VTP statistics:

```
summary advts received 1
subset advts received 0
request advts received 1
summary advts transmitted 89
subset advts transmitted 5
request advts transmitted 0
No of config revision errors 0
No of config digest errors 0
```

VTP pruning statistics:

Trunk	Join Transmitted	Join Received	Summary advts received from non-pruning-capable device	GVRP PDU Received
15/1	0	0	0	0

## Troubleshoot

This section provides information you can use to troubleshoot your configuration.

### Troubleshooting Procedure

This is troubleshooting information relevant to this configuration. Complete these steps in order to troubleshoot trunking between the switches.

1. The VTP domain name must be identical (the VTP domain name is case sensitive).
2. The VTP password must be identical.
3. There must be at least one switch configured as the VTP server in the VTP domain.
4. There can be more than one VTP client in a VTP domain.**Note:** Steps 1 and 2 can be verified if you issue the **show vtp domain** command. If there is a mismatch of results in any of the steps, VTP trunking does not work.

## Related Information

- [InterSwitch Link Frame Format](#)
- [Switches Product Support](#)
- [LAN Switching Technology Support](#)
- [Technical Support & Documentation - Cisco Systems](#)