

# Configuring ISL Trunking Between Catalyst 5000/6000 Switches Running CatOS

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## Introduction

This document provides sample configurations on Inter-Switch Link (ISL) between a Catalyst 5500 and a Catalyst 5000 switch, both running Catalyst OS (CatOS). Any Catalyst 5000 or 6000 family member running CatOS could be used in this scenario to obtain the same results.

Briefly, trunking is a way to carry traffic from several VLANs over a point-to-point link between the two devices. There are two ways in which Ethernet trunking can be implemented:

- ISL (Cisco proprietary Inter-Switch Link protocol)
- 802.1Q (IEEE standard)

This document will only show the configuration files from the switches and the output from the related sample **show** commands. For details on how to configure an ISL trunk between the Catalyst switches, refer to *Configuring ISL Trunking on Catalyst 5500/5000 and 6500/6000 Family Switches*.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

The information in this document is based on these software and hardware versions:

- Catalyst 5500 switch running Catalyst OS 6.1(1) software
- Catalyst 5000 switch running Catalyst OS 6.1(1) software

The information in this document was created from the devices in a specific lab environment. If your network is live, make sure that you understand the potential impact of any command. The configurations on all devices were cleared with the **clear config all** and **write erase** commands to ensure that they had a default configuration.

## Conventions

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

## Important Notes

The Catalyst 4000 family (including Catalyst 2948G and Catalyst 2980G) running CatOS only supports 802.1Q trunking, not ISL trunking.

Any Ethernet port on a Catalyst 6000 family member supports 802.1Q and ISL encapsulation.

Depending on the module, Catalyst 5000 trunk-capable ports may support only ISL encapsulation or both ISL and 802.1Q. The best way to verify this is to issue the **show port capabilities** command. The trunking capacity is explicitly stated. For example:

```
cat5000> show port capabilities 3

Model                WS-X5225R
Port                 3/1
Type                 10/100BaseTX
Speed                auto,10,100
Duplex                half,full
Trunk encap type     802.1Q,ISL
Trunk mode            on,off,desirable,auto,nonegotiate
Channel              3/1-2,3/1-4
Broadcast suppression percentage(0-100)
Flow control          receive-(off,on),send-(off,on)
Security              yes
Membership            static,dynamic
Fast start            yes
QoS scheduling        rx-(none),tx-(none)
CoS rewrite           yes
ToS rewrite           IP-Precedence
Rewrite               no
UDLD                  yes
AuxiliaryVlan         1..1000,1025..4094,untagged,dot1p,none
SPAN                  source,destination
```

Ensure that the trunking modes match across the trunk link. If one side of the link is configured as an ISL trunk, the other side of the link should also be configured as ISL; similarly, if one side of the link is configured as 802.1Q, the other side of the link should also be configured as 802.1Q.

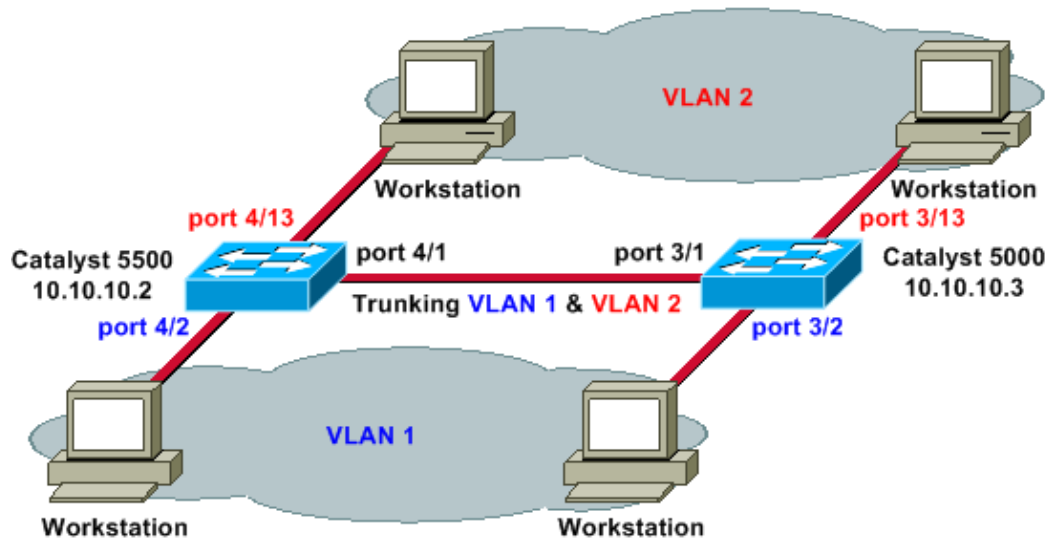
## Configure

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

**Note:** To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only) .

## Network Diagram

This document uses this network setup:



## Configurations

This document uses these configurations:

- Catalyst 5500
- Catalyst 5000

### Catalyst 5500

```
#version 6.1(1)
!
set option fddi-user-pri enabled
set password $2$q.J7$05n.pwx7aEC6NHWJfXadx1
set enablepass $2$o.h/$bAxfjJ4XUA/RMUHqBr1YQ0
!
#errordetection
set errordetection portcounter enable
!
#system
set system name cat5500
!
#frame distribution method
set port channel all distribution mac both
!
#vtp

!--- In this example, the VLAN Trunking Protocol (VTP) mode is set to be transparent.
!--- Depending on your network, set the VTP mode accordingly.

set vtp mode transparent

!--- For details on VTP, refer to Configuring VTP.

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 acti
```

```

ve mode srb aremaxhop 7 stemaxhop 7 backupcrf off
!
#ip
!--- IP address used for management.

set interface sc0 1 10.10.10.2/255.255.255.0 10.10.10.255
!
#set boot command
set boot config-register 0x2102
set boot system flash slot0:cat5000-sup3.6-1-1.bin
!
# default port status is enable
!
!
#module 1 empty
!
#module 2 : 2-port 1000BaseSX Supervisor
!
#module 3 empty
!
#module 4 : 24-port 10/100BaseTX Ethernet

!--- Ports 4/13-24 are assigned to VLAN 2.

set vlan 2 4/13-24

!--- The ISL trunking mode is set to on.
!--- Depending on your network and requirements, set the trunking mode accordingly.

set trunk 4/1 on isl 1-1005

!--- For details on different trunking modes, refer to
!--- Configuring VLAN Trunks on Fast Ethernet and Gigabit Ethernet Ports
!--- Portfast has been enabled on the ports connected to the workstations.

set spantree portfast 4/2-24 enable

!--- For details on why to enable portfast, refer to
!--- Using Portfast and Other Commands to Fix Workstation Startup Connectivity Delays

!
#module 5 empty
!
#module 6 empty
!
#module 7 empty
!
#module 8 empty
!
#module 9 empty
!
#module 10 empty
!
#module 11 empty
!
#module 12 empty
!
#module 13 empty
end

```

## Catalyst 5000

```
#Version 6.1(1)
```

```

!
set option fddi-user-pri enabled
set password $2$J75L$Ug4163kfeHTDcLJZ/L9es1
set enablepass $2$h/BN$i3S54iNvIXknFelh6gOve0
!
#errordetection
set errordetection portcounter enable
!
#system
set system name cat5000
!
#frame distribution method
set port channel all distribution Mac both
!
#vtp

!--- In this example, the VTP mode is set to be transparent.
!--- Depending on your network and requirements, set the VTP mode accordingly.

set vtp mode transparent

!--- For details on VTP, refer to Configuring VTP.

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
ve mode srb aremaxhop 7 stemaxhop 7 backupcrf off
!
#ip

!--- IP address used for management.

set interface sc0 1 10.10.10.3/255.255.255.0 10.10.10.255
!
#set boot command
set boot config-register 0x2102
set boot system flash slot0:cat5000-sup3.6-1-1.bin
!
# default port status is enable
!
!
#module 1 : 0-port Supervisor III
!
#module 2 : 12-port 10/100BaseTX Ethernet
!
#module 3 : 24-port 10/100BaseTX Ethernet

!--- Ports 3/13-24 have been assigned to VLAN 2.

set vlan 2 3/13-24

!--- The ISL trunking mode is set to on.
!--- Depending on your network and requirements, set the trunking mode accordingly.

set trunk 3/1 on isl 1-1005

!--- For details on different trunking modes, refer to
!--- Configuring VLAN Trunks on Fast Ethernet and Gigabit Ethernet Ports
!--- Portfast has been enabled on the ports connected to the workstations.

set spantree portfast 3/2-24 enable

!--- For details on why to enable portfast, refer to

```

```
!--- Using Portfast and Other Commands to Fix Workstation Startup Connectivity Delays
```

```
!  
!  
#module 4 : 24-port 10/100BaseTX Ethernet  
!  
#module 5 : 12-port 10BaseFL Ethernet  
end
```

## Verify

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

Certain **show** commands in particular, **show tech-support** are supported by the Output Interpreter Tool (registered customers only), which allows you to view an analysis of **show** command output.

## Catalyst 5500 Switch

**show port capabilities module/port** Issue this command to verify whether the port is capable of trunking.

```
cat5500> (enable) show port capabilities 4/1  
  
Model                WS-X5234  
Port                 4/1  
Type                 10/100BaseTX  
Speed                auto,10,100  
Duplex               half,full  
Trunk encap type     802.1Q,ISL  
Trunk mode           on,off,desirable,auto,nonegotiate  
Channel              4/1-2,4/1-4  
Broadcast suppression percentage(0-100)  
Flow control         receive-(off,on),send-(off,on)  
Security             yes  
Membership           static,dynamic  
Fast start           yes  
QOS scheduling       rx-(none),TX(1q4t)  
COs rewrite          yes  
ToS rewrite          IP-Precedence  
Rewrite              no  
UDLD                 yes  
AuxiliaryVlan        1..1000,1025..4094,untagged,dot1p,none  
SPAN                 source,destination
```

**show port module/port** Issue this command to determine the status of a particular port and whether or not it is trunking.

```
cat5500> (enable) show port 4/1  
  
Port Name              Status      Vlan      Level Duplex Speed Type  
-----  
4/1                    connected  trunk    normal a-full a-100 10/100BaseTX  
  
Port AuxiliaryVlan AuxVlan-Status  
-----  
4/1 none           none  
  
Port Security Violation Shutdown-Time Age-Time Max-Addr Trap      IfIndex  
-----  
4/1 disabled  shutdown           0         0         1 disabled  11
```

Port	Num-Addr	Secure-Src-Addr	Age-Left	Last-Src-Addr	Shutdown/Time-Left
4/1	0		-	-	-

!--- Output suppressed.

**show trunk** Issue this command to verify the trunking status and configuration.

```
cat5500> (enable) show trunk
```

\* - indicates vtp domain mismatch

Port	Mode	Encapsulation	Status	Native vlan
4/1	on	isl	trunking	1

Port Vlans allowed on trunk

4/1	1-1005
-----	--------

Port Vlans allowed and active in management domain

4/1	1-2
-----	-----

Port Vlans in spanning tree forwarding state and not pruned

4/1	1-2
-----	-----

**show vtp domain** Issue this command to check the VTP information.

```
cat5500> (enable) show vtp domain
```

Domain Name	Domain Index	VTP Version	Local Mode	Password
	1	2	Transparent	-

Vlan-count Max-vlan-storage Config Revision Notifications

6	1023	0	disabled
---	------	---	----------

Last Updater V2 Mode Pruning PruneEligible on Vlans

10.10.10.2	disabled	disabled	2-1000
------------	----------	----------	--------

## Catalyst 5000 Switch

**show port capabilities module/port** Issue this command to verify whether the port is capable of trunking.

```
cat5000> (enable) show port capabilities 3/1
```

Model	WS-X5225R
Port	3/1
Type	10/100BaseTX
Speed	auto,10,100
Duplex	half,full
Trunk encap type	802.1Q,ISL
Trunk mode	on,off,desirable,auto,nonegotiate
Channel	3/1-2,3/1-4
Broadcast suppression	percentage(0-100)
Flow control	receive-(off,on),send-(off,on)
Security	yes
Membership	static,dynamic
Fast start	yes
QOS scheduling	rx-(none),TX(none)

```

COs rewrite          yes
ToS rewrite          IP-Precedence
Rewrite              no
UDLD                 yes
AuxiliaryVlan        1..1000,1025..4094,untagged,dot1p,none
SPAN                  source,destination

```

**show port module/port** Issue this command to determine the status of a particular port and whether or not it is trunking.

```
cat5000> (enable) show port 3/1
```

```

Port  Name                Status      Vlan      Level Duplex Speed Type
-----
 3/1                connected trunk    normal a-full a-100 10/100BaseTX

```

```

Port  AuxiliaryVlan AuxVlan-Status
-----
 3/1  none           none

```

```

Port  Security Violation Shutdown-Time Age-Time Max-Addr Trap      IfIndex
-----
 3/1  disabled shutdown           0         0         1 disabled      57

```

*!--- Output suppressed.*

**show trunk** Issue this command to verify the trunking status and configuration.

```
cat5000> (enable) show trunk
```

```

* - indicates vtp domain mismatch
Port  Mode      Encapsulation  Status      Native vlan
-----
 3/1  on       isl          trunking   1

```

```
Port  Vlans allowed on trunk
```

```
-----
 3/1  1-1005
```

```
Port  Vlans allowed and active in management domain
```

```
-----
 3/1  1-2
```

```
Port  Vlans in spanning tree forwarding state and not pruned
```

```
-----
 3/1  1-2
```

**show vtp domain** Issue this command to check the VTP information.

```
cat5000> (enable) show vtp domain
```

```

Domain Name                Domain Index VTP Version Local Mode Password
-----
                                1                2                Transparent -

```

```
Vlan-count Max-vlan-storage Config Revision Notifications
```

```
-----
 6          1023          0          disabled

```

```
Last Updater V2 Mode Pruning PruneEligible on Vlans
```

```
-----
10.10.10.3    disabled disabled 2-1000

```



# Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

## Related Information

- [LAN Product Support Pages](#)
  - [LAN Switching Support Page](#)
  - [Technical Support & Documentation – Cisco Systems](#)
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