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Creating Ethernet VLANs on Catalyst Switches

Document ID: 10023

Introduction

Prerequisites

- Requirements
- Components Used
- Related Products
- Conventions

Configuring the VLAN on Catalyst Switches Running CatOS

- Create VLANs and Ports
- Remove Ports or VLANs
- Troubleshooting Tips

Configuring the VLAN on Catalyst 2900 XL, 3500 XL, 2950, 2970, and 2940 Series Switches

- Create VLANS and Ports
- Remove Ports or VLANS

Configuring Multi-VLAN Port on Catalyst 2900 XL/3500 XL

Configuring the VLAN on Catalyst 3550, 3750, 4000/4500, and 6000/6500 Switches

Running Integrated Cisco IOS Software (Native Mode)

- Create VLANs and Ports
- Remove VLANs
- Troubleshooting Tips

NetPro Discussion Forums – Featured Conversations

Related Information

Introduction

This document provides basic information on how to create VLANs on Catalyst switches running Catalyst OS (CatOS) and Integrated Cisco IOS® Software (Native Mode). The sample commands for each section use one Catalyst switch from each configuration section.

Prerequisites

Requirements

Readers of this document should have knowledge of the information in this section.

VLANs are a mechanism to allow network administrators to create logical broadcast domains that can span across a single switch or multiple switches, regardless of physical proximity. This is useful to reduce the size of broadcast domains or to allow groups or users to be logically grouped without the need to be physically located in the same place.

To create VLANs, you must decide how to configure these items:

- What VLAN Trunk Protocol (VTP) domain name and VTP mode will be used on this switch?
- What ports on the switch will belong to which VLAN?
- Will you need to have communication between VLANs, or will they be isolated? If you require communication between VLANs, you will need to use a Layer 3 (L3) routing device, such as an

external Cisco router or an internal router module:

- ◆ WS-X4232-L3 card for Catalyst 4000 with Supervisor Engine I (SUP1) and SUP11
- ◆ Route Switch Module (RSM) or Route Switch Feature Card (RSFC) for Catalyst 5000
- ◆ Multilayer Switch Module (MSM) or Multilayer Switch Feature Card (MSFC) for Catalyst 6000

Some of the switches have built-in support in software and hardware to do InterVLAN routing (no external device, modules, or daughter cards are required):

- ◆ Catalyst 3550/3750/6500 with SUP720
- ◆ Catalyst 4000/4500 with SUP11+, SUP111, and SUP114

For details on InterVLAN routing configuration on an MSFC, RSM, RSFC, or external router, refer to these documents:

- Configuring InterVLAN Routing with Catalyst 3750/3560/3550 Series Switches
- Configuring InterVLAN Routing on the MSFC
- Configuring InterVLAN Routing on the RSM
- Configuring InterVLAN Routing on the RSFC
- Configuring InterVLAN Routing on an External Cisco Router
- Configuring InterVLAN Routing Using an Internal Router (Layer 3 Card) on Catalyst 5500/5000 and 6500/6000 Switches That Run CatOS System Software
- Configuring InterVLAN Routing and ISL/802.1Q Trunking on a Catalyst 2900 XL/3500 XL/2950 Switch Using An External Router

Note: This document assumes that you have basic connectivity to the switch, either through the console or through Telnet access. For details on how to get basic connectivity to the switches, refer to these documents:

- Catalyst 6000 family switches Basic Software Configuration
- XL series switches Quick Start Guide

Components Used

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

- Catalyst 6009 switch running Catalyst OS 5.5(x) software
- Catalyst 3524XL switch running Cisco IOS Software Release 12.0(5.x)XU
- Catalyst 4507 switch with SUP114 (WS-X4515) running Cisco IOS Software Release 12.1(13)EW1

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Related Products

The information in this document can also be used with the these switches:

- Catalyst 4000/4500/2948G/2980G/4912G switches
- Catalyst 5000/2926G family switches
- Catalyst 6000/6500 family switches
- Catalyst 2900 XL/3500 XL/2950/3550/3750 switches

Conventions

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

Configuring the VLAN on Catalyst Switches Running CatOS

Create VLANs and Ports

Follow these steps:

1. Before you can create a VLAN, the switch must be in VTP server mode or VTP transparent mode. If the switch is a VTP server, you must define a VTP domain name before you can add any VLANs.

This must be defined, regardless of the number of switches in the network (one or many) and regardless of whether you will use VTP to propagate VLANs to other switches in the network.

This is the default VTP configuration on the switch:

```
CatosSwitch> (enable) show vtp domain

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

Vlan-count Max-vlan-storage Config Revision Notifications
-----
5           1023             0             disabled

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

Issue the **set vtp** command, to set the domain name and mode.

```
CatosSwitch> (enable) set vtp domain ?

<name>                Domain name

CatosSwitch> (enable) set vtp domain cisco ?

mode                   Set VTP mode
passwd                 Set VTP password
pruning                Set VTP pruning
v2                     Set VTP version 2

CatosSwitch> (enable) set vtp domain cisco mode ?

client                 VTP client mode
server                 VTP server mode
transparent            VTP transparent mode

CatosSwitch> (enable) set vtp domain cisco mode server

VTP domain cisco modified
```

Note: For details on VTP, refer to Understanding and Configuring VLAN Trunk Protocol (VTP).

2. Issue the **show vtp domain** command, to verify VTP configuration.

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

| Domain Name | Domain Index | VTP Version | Local Mode | Password |
|-------------|--------------|-------------|------------|----------|
| cisco | 1 | 2 | server | - |

| Vlan-count | Max-vlan-storage | Config Revision | Notifications |
|------------|------------------|-----------------|---------------|
| 5 | 1023 | 1 | disabled |

| Last Updater | V2 Mode | Pruning | PruneEligible on Vlans |
|--------------|----------|----------|------------------------|
| 0.0.0.0 | disabled | disabled | 2-1000 |

Note: If you have the output of a **show vtp domain** command from your Cisco device, you can use Output Interpreter (registered customers only) to display potential issues and fixes.

3. Once the VTP domain has been set and verified, you can begin to create VLANs on the switch.

By default, there is only a single VLAN for all ports, and this VLAN is called `default`. VLAN 1 can not be renamed or deleted.

Issue the **show vlan** command, to display the parameters for all configured VLANs in the administrative domain.

```
CatosSwitch> (enable) show vlan
```

| VLAN Name | Status | IfIndex | Mod/Ports, Vlans |
|-------------------------|--------|---------|---------------------------|
| 1 default | active | 5 | 1/1-2 3/1-48 4/1-16 |
| 1002 fddi-default | active | 6 | |
| 1003 token-ring-default | active | 9 | |
| 1004 fddinet-default | active | 7 | |
| 1005 trnet-default | active | 8 | |

| VLAN | Type | SAID | MTU | Parent | RingNo | BrdgNo | Stp | BrdgMode | Trans1 | Trans2 |
|------|-------|--------|------|--------|--------|--------|-----|----------|--------|--------|
| 1 | enet | 100001 | 1500 | - | - | - | - | - | 0 | 0 |
| 1002 | fddi | 101002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1003 | trcrf | 101003 | 1500 | - | - | - | - | - | 0 | 0 |
| 1004 | fdnet | 101004 | 1500 | - | - | - | - | - | 0 | 0 |
| 1005 | trbrf | 101005 | 1500 | - | - | - | ibm | - | 0 | 0 |

| VLAN | DynCreated | RSPAN |
|------|------------|----------|
| 1 | static | disabled |
| 1002 | static | disabled |
| 1003 | static | disabled |
| 1004 | static | disabled |
| 1005 | static | disabled |

| VLAN | AREHops | STEHops | Backup | CRF | lq | VLAN |
|------|---------|---------|--------|-----|----|------|
| 1003 | 7 | 7 | off | | | |

a. Issue the **set vlan** command, to create VLANs.

```
CatosSwitch> (enable) set vlan
```

```

Usage: set vlan <vlan> <mod/port>
      (An example of mod/port is 1/1,2/1-12,3/1-2,4/1-12)
      set vlan <vlan_num> [name <name>] [type <type>] [state <state>]
                              [pvlan-type <pvlan_type>]
                              [said <said>] [mtu <mtu>]
                              [ring <hex_ring_number>]
                              [decring <decimal_ring_number>]
                              [bridge <bridge_number>] [parent <vlan_num>]
                              [mode <bridge_mode>] [stp <stp_type>]
                              [translation <vlan_num>] [backupcrf <off|on>]
                              [aremaxhop <hopcount>] [stemaxhop <hopcount>]
                              [rspan]

      (name = 1..32 characters, state = (active, suspend)
      type = (ethernet, fddi, fddinet, trcrf, trbrf)
      said = 1..4294967294, mtu = 576..18190
      pvlan-type = (primary,isolated,community,none)
      hex_ring_number = 0x1..0xffff, decimal_ring_number = 1..4095
      bridge_number = 0x1..0xf, parent = 2..1005, mode = (srt, srb)
      stp = (ieee, IBM, auto), translation = 1..1005
      hopcount = 1..13)

```

Set vlan commands:

```

-----
set vlan                Set vlan information
set vlan mapping        Map an 802.1q vlan to an Ethernet vlan

```

```
CatosSwitch> (enable) set vlan 2 name cisco_vlan_2
```

Vlan 2 configuration successful

b. Issue the **show vlan** command, to verify the VLAN configuration.

```
CatosSwitch> (enable) show vlan
```

| VLAN | Name | Status | IfIndex | Mod/Ports, Vlans |
|----------|---------------------|---------------|---------|---------------------------|
| 1 | default | active | 5 | 1/1-2 3/1-48 4/1-16 |
| 2 | cisco_vlan_2 | active | 75 | |
| 1002 | fddi-default | active | 6 | |
| 1003 | token-ring-default | active | 9 | |
| 1004 | fddinet-default | active | 7 | |
| 1005 | trnet-default | active | 8 | |

| VLAN | Type | SAID | MTU | Parent | RingNo | BrdgNo | Stp | BrdgMode | Trans1 | Trans2 |
|----------|-------------|---------------|-------------|--------|--------|--------|-----|----------|----------|----------|
| 1 | enet | 100001 | 1500 | - | - | - | - | - | 0 | 0 |
| 2 | enet | 100002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1002 | fddi | 101002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1003 | trcrf | 101003 | 1500 | - | - | - | - | - | 0 | 0 |
| 1004 | fdnet | 101004 | 1500 | - | - | - | - | - | 0 | 0 |
| 1005 | trbrf | 101005 | 1500 | - | - | - | IBM | - | 0 | 0 |

!--- Output suppressed.

c. If you want to add ports to the VLAN, issue the **set vlan vlan_number mod/ports** command.

```
CatosSwitch> (enable) set vlan 2 3/1-12
```

```

VLAN 2 modified.
VLAN 1 modified.
VLAN Mod/Ports

```

```

-----
2      3/1-12
      15/1

```

- d. You can also create the VLAN and add the ports to that VLAN with all the information in a single command.

For example, if you want to create the third VLAN and then assign ports 3/13 through 3/15 to that VLAN, issue this command:

```

CatosSwitch> (enable) set vlan 3 3/13-15

Vlan 3 configuration successful
VLAN 3 modified.
VLAN 1 modified.
VLAN  Mod/Ports
-----
3      3/13-15
      15/1

```

4. Issue the **show vlan** command, to verify the VLAN configuration.

```

CatosSwitch> (enable) show vlan

VLAN Name                               Status   IfIndex Mod/Ports, Vlans
-----
1      default                               active   5       1/1-2
                                           3/16-48
                                           4/1-16
2      cisco_vlan_2                           active   75      3/1-12
3      VLAN0003                                active   76      3/13-15
1002  fddi-default                             active   6
1003  token-ring-default                       active   9
1004  fddinet-default                          active   7
1005  trnet-default                             active   8

VLAN Type  SAID      MTU   Parent RingNo BrdgNo  Stp  BrdgMode Trans1 Trans2
-----
1      enet    100001   1500  -     -     -     -     -         0      0
2      enet    100002   1500  -     -     -     -     -         0      0
3      enet    100003   1500  -     -     -     -     -         0      0
1002  fddi    101002   1500  -     -     -     -     -         0      0
1003  trcrf   101003   1500  -     -     -     -     -         0      0
1004  fdnet   101004   1500  -     -     -     -     -         0      0
1005  trbrf   101005   1500  -     -     -     IBM  -         0      0

```

!--- Output suppressed.

Remove Ports or VLANs

To remove ports from a VLAN, issue the **set vlan *vlan_number mod/ports*** command and place the ports in a different VLAN. This is essentially what happens when you assign a port to any VLAN, because all ports initially belonged to VLAN 1.

To delete a VLAN, issue the **clear vlan** command. The ports are deactivated, because they remain a part of that VLAN and it no longer exists. The switch displays a warning and gives you the opportunity to cancel the current request.

```

CatosSwitch> (enable) clear vlan 3

```

This command will deactivate all ports on vlan 3

```
in the entire management domain.
Do you want to continue(y/n) [n]? y
```

```
Vlan 3 deleted
```

```
CatosSwitch> (enable) show vlan
```

| VLAN | Name | Status | IfIndex | Mod/Ports, Vlans |
|------|--------------------|--------|---------|-----------------------------------|
| 1 | default | active | 5 | 1/1-2 3/16-48 4/1-16 |
| 2 | cisco_vlan_2 | active | 75 | 3/1-12 |
| 1002 | fddi-default | active | 6 | |
| 1003 | token-ring-default | active | 9 | |
| 1004 | fddinet-default | active | 7 | |
| 1005 | trnet-default | active | 8 | |

| VLAN | Type | SAID | MTU | Parent | RingNo | BrdgNo | Stp | BrdgMode | Trans1 | Trans2 |
|------|-------|--------|------|--------|--------|--------|-----|----------|--------|--------|
| 1 | enet | 100001 | 1500 | - | - | - | - | - | 0 | 0 |
| 2 | enet | 100002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1002 | fddi | 101002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1003 | trcrf | 101003 | 1500 | - | - | - | - | - | 0 | 0 |
| 1004 | fdnet | 101004 | 1500 | - | - | - | - | - | 0 | 0 |
| 1005 | trbrf | 101005 | 1500 | - | - | - | IBM | - | 0 | 0 |

```
!--- Output suppressed.
```

Note: Ports 3/13 through 3/15 are not displayed in that **show vlan** command, as they are deactivated by the removal of VLAN 3. They will not be displayed until you add them back in another VLAN.

Troubleshooting Tips

This section provides troubleshooting tips for common problems that you might encounter while you are creating VLANs on Catalyst switches running CatOS:

- If you create a VLAN when there is no VTP domain name defined, you receive this error message:

```
Cannot add/modify VLANs on a VTP server without a domain name.
```

To correct this, create a VTP domain name on the switch, as shown in the Create VLANs and Ports section.

- If you create a VLAN on a switch that is in VTP client mode, you receive this error message:

```
Cannot add/modify VLANs on a VTP client.
```

Note: A switch is only allowed to create VLANs if it is in VTP server or VTP transparent modes. For details on VTP, refer to Understanding and Configuring VLAN Trunk Protocol (VTP).

- Ports are in *inactive* state in **show port mod/port** command output. This means that the VLAN to which the ports originally belonged was deleted, usually because of VTP. You can either recreate that VLAN or correct the VTP configuration so that the VLAN is re-established in the VTP domain. This is sample **show port mod/port** command output:

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

| Port | Name | Status | Vlan | Duplex | Speed | Type |
|------|------|--------|------|--------|-------|------|
|------|------|--------|------|--------|-------|------|

```

3/1                inactive 2                auto auto 10/100BaseTX

Port  AuxiliaryVlan  AuxVlan-Status      InlinePowered      PowerAllocated
      Admin Oper    Detected mWatt mA @42V
-----
3/1  none          none                -      -      -      -      -

```

!--- Output suppressed.

If you have the output of a **show-tech support** command from your Cisco device, you can use Output Interpreter (registered customers only) to display potential issues and fixes.

```
CatosSwitch> (enable) show vlan 2
```

```

VLAN Name                Status      IfIndex Mod/Ports, Vlans
-----
Unable to access VTP Vlan 2 information.

```

```

VLAN Type  SAID      MTU    Parent RingNo BrdgNo Stp  BrdgMode Trans1 Trans2
-----
Unable to access VTP Vlan 2 information.

```

```

VLAN DynCreated  RSPAN
-----
Unable to access VTP Vlan 2 information.

```

```

VLAN AREHops STEHops Backup CRF lq VLAN
-----

```

Configuring the VLAN on Catalyst 2900 XL, 3500 XL, 2950, 2970, and 2940 Series Switches

Create VLANS and Ports

Note: Depending on your model of switch, you may see output different from some of commands that are displayed in this section.

Follow these steps:

1. Before you create VLANs, you must decide whether to use VTP in your network.

With VTP, you can make configuration changes centrally on a single switch, and you can automatically communicate those changes to all of the other switches in the network. The default VTP mode is the server mode, on the switches mentioned in this section. For details on VTP, refer to Understanding and Configuring VLAN Trunk Protocol (VTP).

Note: Issue the **show vtp status** command, to check the VTP status on XL series switches.

```

3524XL# show vtp status

VTP Version                : 2
Configuration Revision     : 0
Maximum VLANs supported locally : 254

```

```

Number of existing VLANs      : 5
VTP Operating Mode           : Server

!--- This is the default mode.

VTP Domain Name              :
VTP Pruning Mode             : Disabled
VTP V2 Mode                  : Disabled
VTP Traps Generation         : Disabled
MD5 digest                   : 0xBF 0x86 0x94 0x45 0xFC 0xDF 0xB5 0x70
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00

```

2. Once the VTP domain has been set and verified, you can begin to create VLANs on the switch.

By default, there is only a single VLAN for all ports, and this VLAN is called default. VLAN 1 can not be renamed or deleted.

Issue the **show vlan** command, to check the VLAN information.

```

3524XL# show vlan

VLAN Name                Status    Ports
-----
1    default                active    Fa0/1, Fa0/2, Fa0/3, Fa0/4,
                                Fa0/5, Fa0/6, Fa0/7, Fa0/8,
                                Fa0/9, Fa0/10, Fa0/11, Fa0/12,
                                Fa0/13, Fa0/14, Fa0/15, Fa0/16,
                                Fa0/17, Fa0/18, Fa0/19, Fa0/20,
                                Fa0/21, Fa0/22, Fa0/23, Fa0/24,
                                Gi0/1, Gi0/2

1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active

VLAN Type  SAID      MTU   Parent  RingNo BridgeNo  Stp   BrdgMode Trans1 Trans2
-----
1    enet    100001    1500  -       -       -       -     -       1002  1003
1002 fddi    101002    1500  -       -       -       -     -       1     1003
1003 tr     101003    1500  1005    0       -       -     srb     1     1002
1004 fdnet  101004    1500  -       -       1       IBM   -       0     0
1005 trnet  101005    1500  -       -       1       IBM   -       0     0

```

Issue this set of commands in privileged mode, to create another VLAN:

```

3524XL# vlan database

!--- You must enter into VLAN database, to configure any VLAN.

3524XL(vlan)# vtp server

Device mode already VTP SERVER.

!--- You may skip this command, if the switch is already in server mode and you
!--- want the switch to be in server mode.

```

Note: A switch is only allowed to create VLANs if it is in VTP server or VTP transparent modes. For details on VTP, refer to Understanding and Configuring VLAN Trunk Protocol (VTP).

```

524XL(vlan)# vlan ?

```

```
<1-1005> ISL VLAN index
```

```
3524XL(vlan)# vlan 2 ?
```

```
are          Maximum number of All Route Explorer hops for this VLAN
backupcrf   Backup CRF mode of the VLAN
bridge      Bridging characteristics of the VLAN
media       Media type of the VLAN
mtu         VLAN Maximum Transmission Unit
name        Ascii name of the VLAN
parent      ID number of the Parent VLAN of FDDI or Token Ring type VLANs
ring        Ring number of FDDI or Token Ring type VLANs
said        IEEE 802.10 SAID
state       Operational state of the VLAN
ste         Maximum number of Spanning Tree Explorer hops for this VLAN
stp         Spanning tree characteristics of the VLAN
tb-vlan1    ID number of the first translational VLAN for this VLAN (or zero
            if none)
tb-vlan2    ID number of the second translational VLAN for this VLAN (or zero
            if none)
```

```
3524XL(vlan)# vlan 2 name ?
```

```
WORD        The ASCII name for the VLAN
```

```
3524XL(vlan)# vlan 2 name cisco_vlan_2
```

```
VLAN 2 added:
Name: cisco_vlan_2
```

```
3524XL(vlan)# exit
```

```
!--- You have to exit from the VLAN database, for the changes to be committed.
```

```
APPLY completed.
```

```
Exiting....
```

```
3524XL#
```

3. Issue the **show vlan** command, to ensure that the VLAN is created.

```
3524XL# show vlan
```

| VLAN | Name | Status | Ports |
|------|--------------------|--------|---|
| 1 | default | active | Fa0/1, Fa0/2, Fa0/3, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gi0/1, Gi0/2 |
| 2 | cisco_vlan_2 | active | |
| 1002 | fddi-default | active | |
| 1003 | token-ring-default | active | |
| 1004 | fddinet-default | active | |
| 1005 | trnet-default | active | |

| VLAN | Type | SAID | MTU | Parent | RingNo | BridgeNo | Stp | BrdgMode | Trans1 | Trans2 |
|------|-------|--------|------|--------|--------|----------|-----|----------|--------|--------|
| 1 | enet | 100001 | 1500 | - | - | - | - | - | 1002 | 1003 |
| 2 | enet | 100002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1002 | fddi | 101002 | 1500 | - | - | - | - | - | 1 | 1003 |
| 1003 | tr | 101003 | 1500 | 1005 | 0 | - | - | srb | 1 | 1002 |
| 1004 | fdnet | 101004 | 1500 | - | - | 1 | - | IBM | - | 0 |
| 1005 | trnet | 101005 | 1500 | - | - | 1 | - | - | - | - |

4. You may want to add ports (interfaces) in the newly created VLAN. You have to go to **interface configuration mode** for each of the interfaces that you want to add into the new VLAN.

Issue this set of commands in privileged mode, to add a particular interface in the VLAN:

```
3524XL# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

3524XL(config)# interface fastEthernet 0/2

3524XL(config-if)# switchport access ?

    vlan    Set VLAN when interface is in access mode

3524XL(config-if)# switchport access vlan ?

    <1-1001> VLAN ID of the VLAN when this port is in access mode
    dynamic  When in access mode, this interfaces VLAN is controlled by VMPS

3524XL(config-if)# switchport access vlan 2

!--- Those two commands assign interface Fa0/2 to VLAN 2.

3524XL(config-if)# exit

3524XL(config)# interface fastEthernet 0/3

3524XL(config-if)# switchport access vlan 2

!--- Those two commands assign interface Fa0/3 to VLAN 2.

3524XL(config-if)# end

3524XL#
00:55:26: %SYS-5-CONFIG_I: Configured from console by console

3524XL# write memory

!--- Saves the configuration.

Building configuration...
```

5. Issue the **show vlan** command, to verify the VLAN configuration.

```
3524XL# show vlan
```

| VLAN | Name | Status | Ports |
|------|--------------------|--------|---|
| 1 | default | active | Fa0/1, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gi0/1, Gi0/2 |
| 2 | cisco_vlan_2 | active | Fa0/2, Fa0/3 |
| 1002 | fddi-default | active | |
| 1003 | token-ring-default | active | |
| 1004 | fddinet-default | active | |
| 1005 | trnet-default | active | |

| VLAN | Type | SAID | MTU | Parent | RingNo | BridgeNo | Stp | BrdgMode | Trans1 | Trans2 |
|------|------|--------|------|--------|--------|----------|-----|----------|--------|--------|
| 1 | enet | 100001 | 1500 | - | - | - | - | - | 1002 | 1003 |

| | | | | | | | | | | |
|------|-------|--------|------|------|---|---|-----|-----|---|------|
| 2 | enet | 100002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1002 | fddi | 101002 | 1500 | - | - | - | - | - | 1 | 1003 |
| 1003 | tr | 101003 | 1500 | 1005 | 0 | - | - | srb | 1 | 1002 |
| 1004 | fdnet | 101004 | 1500 | - | - | 1 | IBM | - | 0 | 0 |
| 1005 | trnet | 101005 | 1500 | - | - | 1 | IBM | - | 0 | 0 |

Remove Ports or VLANS

To remove ports from the VLAN, issue the **no switchport access vlan *vlan_number*** command in interface configuration mode. Once the port is removed from a VLAN that is not VLAN 1 (the default VLAN), that port is automatically added back to the default VLAN.

For example, if you want to remove interface Fa0/2 from cisco_vlan_2 (VLAN 2), issue this set of commands in privileged mode:

```
3524XL# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
3524XL(config)# interface fastEthernet 0/2
```

```
3524XL(config-if)# no switchport access vlan 2
```

```
!--- Those two commands remove interface Fa0/2 from VLAN 2.
```

```
3524XL(config-if)# end
```

```
3524XL# show vlan
```

| VLAN | Name | Status | Ports |
|------|---------|--------|-------------------------------------|
| 1 | default | active | Fa0/1, Fa0/2 , Fa0/4, Fa0/5, |

```
!--- Note that Fa0/2 is added back to the default VLAN.
```

| | | | | | | | | | | |
|----------|---------------------|---------------|--------------|--|--|--|--|--|--|---|
| | | | | | | | | | | |
| | | | | | | | | | | Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gi0/1, Gi0/2 |
| 2 | cisco_vlan_2 | active | Fa0/3 | | | | | | | |
| 1002 | fddi-default | active | | | | | | | | |
| 1003 | token-ring-default | active | | | | | | | | |
| 1004 | fddinet-default | active | | | | | | | | |
| 1005 | trnet-default | active | | | | | | | | |

| VLAN | Type | SAID | MTU | Parent | RingNo | BridgeNo | Stp | BrdgMode | Trans1 | Trans2 |
|------|-------|--------|------|--------|--------|----------|-----|----------|--------|--------|
| 1 | enet | 100001 | 1500 | - | - | - | - | - | 1002 | 1003 |
| 2 | enet | 100002 | 1500 | - | - | - | - | - | 0 | 0 |
| 1002 | fddi | 101002 | 1500 | - | - | - | - | - | 1 | 1003 |
| 1003 | tr | 101003 | 1500 | 1005 | 0 | - | - | srb | 1 | 1002 |
| 1004 | fdnet | 101004 | 1500 | - | - | 1 | IBM | - | 0 | 0 |
| 1005 | trnet | 101005 | 1500 | - | - | 1 | IBM | - | 0 | 0 |

To delete the VLAN, issue the **no vlan *vlan_number*** command in VLAN database mode. Interfaces that were in that VLAN will remain a part of that VLAN and be deactivated, because they no longer belong to any VLAN.

For example, if you want to delete `cisco_vlan_2` from the switch, issue this set of commands in privileged mode:

```
3524XL# vlan database
!--- Enters the VLAN database mode.

3524XL(vlan)# no vlan 2
!--- Removes the VLAN from the database.

Deleting VLAN 2...

3524XL(vlan)# exit

APPLY completed.
Exiting...

3524XL# show vlan

VLAN Name                Status    Ports
-----
1    default                active    Fa0/1, Fa0/2, Fa0/4, Fa0/5,
Fa0/6, Fa0/7, Fa0/8, Fa0/9,
Fa0/10, Fa0/11, Fa0/12, Fa0/13,
Fa0/14, Fa0/15, Fa0/16, Fa0/17,
Fa0/18, Fa0/19, Fa0/20, Fa0/21,
Fa0/22, Fa0/23, Fa0/24, Gi0/1,
Gi0/2

1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default          active

!--- Output suppressed.
```

Notice that port `Fa0/3` is not displayed in that `show vlan` command output, as it is deactivated by the removal of VLAN 2. Unless you add it back in another VLAN, it will neither be displayed nor usable.

```
3524XL# show interfaces fastEthernet 0/3

FastEthernet0/3 is down, line protocol is down

!--- Output suppressed.
```

To make the interface usable, you must ensure that it belongs to some VLAN. In the previous case, you have to add interface `Fa0/3` to the default VLAN (VLAN 1), to make this interface usable.

If you have the output of a `show-tech support` command from your Cisco device, you can use Output Interpreter (registered customers only) to display potential issues and fixes.

Note: In the case of Catalyst 3550 switches, you can still use the interface without adding it to a VLAN, if you make that interface an L3 interface. For further details on L3 interfaces on Catalyst 3550 Switches, refer to the Configuring Layer 3 Interfaces section of Configuring Interface Characteristics.

Configuring Multi-VLAN Port on Catalyst 2900 XL/3500 XL

The multi-VLAN port feature on Catalyst 2900 XL/3500 XL switches allows you to configure a single port in two or more VLANs. This feature allows users from different VLANs to access a server or router without the implementation of InterVLAN routing capability. A multi-VLAN port performs normal switching functions in all of its assigned VLANs. VLAN traffic on the multi-VLAN port is not encapsulated as it is in trunking.

Note: These are the limitations to the implementation of multi-VLAN port features:

- You can not configure a multi-VLAN port when a trunk is configured on the switch. You must connect the multi-VLAN port only to a router or server. The switch automatically transitions to VTP transparent mode when the multi-VLAN port feature is enabled, which makes the VTP disabled. No VTP configuration is required.
- The multi-VLAN port feature is supported only on Catalyst 2900 XL/3500 XL series switches. This feature is not supported on Catalyst 4000/5000/6000 series or any other Cisco Catalyst switches.

1. To show how the multi-VLAN port is configured, three VLANs are created on a Catalyst 3512 XL switch, and one port of the switch is connected to an external router. The port connected to the router will be configured as a multi-VLAN port.

```
6-3512xl# show vlan
```

| VLAN | Name | Status | Ports |
|------|----------|--------|--|
| 1 | default | active | Fa0/1, Fa0/3, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Gi0/1, Gi0/2 |
| 2 | VLAN0002 | active | Fa0/2, Fa0/4 |
| 3 | VLAN0003 | active | Fa0/5 |
| 4 | VLAN0004 | active | |
| 5 | VLAN0005 | active | |
| 6 | VLAN0006 | active | |

In that example, port Fa0/1 is connected to an external router. For more information about how to create VLANs and assign ports to VLANs, refer to the Configuring the VLAN on Catalyst 2900 XL, 3500 XL, 2950, 2970, and 2940 Series Switches section of this document.

2. Configure the Fa0/1 port in multi-VLAN mode, and add assigned VLANs to the multi-VLAN port.

```
6-3512xl# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
6-3512xl(config)# interface fa0/1
```

```
6-3512xl(config-if)# switchport mode multi
```

```
!--- Changes port Fa0/1 mode to multi.
```

```
6-3512xl(config-if)# switchport multi vlan ?
```

```
LINE      VLAN IDs of VLANs to be used in multi-VLAN mode
add       add VLANs to the current list
remove    remove VLANs from the current list
```

```
6-3512xl(config-if)# switchport multi vlan 1,2,3
```

```
!--- Assigns VLANs 1, 2, and 3 to multi-VLAN port Fa0/1.
```

```
6-3512xl(config-if)# ^Z
```

```
6-3512xl#
```

3. Issue the **show interface interface-id switchport** and **show vlan** commands, to verify the configuration.

```
6-3512xl# show interface fa0/1 switchport
```

```
Name: Fa0/1
```

```
Operational Mode: multi
```

```
!--- The port is in multi-VLAN mode.
```

```
Administrative Trunking Encapsulation: isl
```

```
Operational Trunking Encapsulation: isl
```

```
Negotiation of Trunking: Disabled
```

```
Access Mode VLAN: 0 ((Inactive))
```

```
Trunking Native Mode VLAN: 1 (default)
```

```
Trunking VLANs Enabled: NONE
```

```
Pruning VLANs Enabled: NONE
```

```
Priority for untagged frames: 0
```

```
Override vlan tag priority: FALSE
```

```
Voice VLAN: none
```

```
Appliance trust: none
```

```
6-3512xl# show vlan brief
```

| VLAN | Name | Status | Ports |
|------|----------|--------|--|
| 1 | default | active | Fa0/1, Fa0/3, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/1 Fa0/12, Gi0/1, Gi0/2 |
| 2 | VLAN0002 | active | Fa0/1, Fa0/2, Fa0/4 |

```
!--- Note: Previously, port Fa0/1 was only in VLAN 1; now it is assigned to  
!--- multiple VLANs 1, 2, and 3.
```

```
3 VLAN0003
```

```
active
```

```
Fa0/1, Fa0/5
```

```
4 VLAN0004
```

```
active
```

```
5 VLAN0005
```

```
active
```

4. Issue the **ping** command from switch to router, to verify the multi-VLAN operation. The **ping** command should get a reply from the router every time the management IP address is assigned to any of the VLANs 1, 2, or 3.

```
6-3512xl# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
6-3512xl(config)# interface vlan 1
```

```
6-3512xl(config-if)# ip address 192.168.1.1 255.255.255.0
```

```
!--- The management IP address is assigned to VLAN 1.
```

```
6-3512xl(config-if)# ^Z
```

```
6-3512xl#
```

```
23:56:54: %SYS-5-CONFIG_I: Configured from console by console
```

```

6-3512x1# ping 192.168.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/3 ms

6-3512x1# ping 192.168.1.2

!--- You can ping the router from VLAN 1.

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/3 ms

6-3512x1# configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.

6-3512x1(config)# interface vlan 1

6-3512x1(config-if)# no ip address

!--- The management IP address is removed from VLAN 1.

6-3512x1(config-if)# shutdown

6-3512x1(config-if)# exit

6-3512x1(config)# interface vlan 2

6-3512x1(config-subif)# ip address 192.168.1.1 255.255.255.0

6-3512x1(config-subif)# no shutdown

!--- The management IP address is assigned to VLAN 2.

6-3512x1(config-subif)# exit

6-3512x1(config)# exit

6-3512x1# ping 192.168.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/3 ms

6-3512x1# ping 192.168.1.2

!--- You can ping the router from VLAN 2.

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/202/1004 ms

6-3512x1# configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.

6-3512x1(config)# interface vlan 2

```

```

6-3512xl(config-subif)# no ip address

!--- The management IP address is removed from VLAN 2.

6-3512xl(config-subif)# shutdown

6-3512xl(config-subif)# exit

6-3512xl(config)# interface vlan 3

6-3512xl(config-subif)# ip address 192.168.1.1 255.255.255.0

6-3512xl(config-subif)# no shut

!--- The management IP address is assigned to VLAN 3.

6-3512xl(config-subif)# exit

6-3512xl(config)# exit

6-3512xl# ping 192.168.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/3 ms

6-3512xl# ping 192.168.1.2

!--- You can ping the router from VLAN 3.

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/205/1004 ms

```

Configuring the VLAN on Catalyst 3550, 3750, 4000/4500, and 6000/6500 Switches Running Integrated Cisco IOS Software (Native Mode)

Create VLANs and Ports

This section uses the Catalyst 4500 for sample configuration commands, but the configuration tasks also apply to other switches that run L3 (or Integrated Cisco Software IOS (Native Mode)). This includes the Catalyst 3550, 3570, and 6500 series switches that run Integrated Cisco IOS Software (Native Mode). Before you can create a VLAN, the switch must be in VTP server mode or VTP transparent mode. If the switch is a VTP server, you must define a VTP domain name before you add any VLANs. This must be defined, regardless of the number of switches in the network (one or many) and regardless of whether you will use VTP to propagate VLANs to other switches in the network. For more information on configuring VTP on Catalyst 4000/4500 Cisco IOS-based Supervisor modules, refer to Understanding and Configuring VTP. For VTP configuration information for other Catalyst switch platforms, refer to the Software Configuration Guide for the switch platform under consideration.

VLANs can be created in either VLAN database or global configuration mode. VLANs numbered higher than 1005 have to be created in global configuration mode, and the VTP mode needs to be set to transparent to create these VLANs. VLANs numbered higher than 1005 will not be advertised by VTP. Furthermore, VLANs numbered higher than 1005 are stored in the switch configuration file and not in the VLAN .dat file.

The default location of the VLAN .dat file in Catalyst 4000 switches with SUPIV is the cat4000_flash directory.

```
Switch# dir cat4000_flash:

Directory of cat4000_flash:/

1 -rw- 676 <no date> vlan.dat

524260 bytes total (523584 bytes free)
```

Note: A Catalyst 6500 switch running Integrated Cisco IOS Software (Native Mode) allows you to create VLANs in server mode without a VTP domain name.

The **show vtp status** command shows the VTP information in the switch.

```
Switch# show vtp status

VTP Version : 2
Configuration Revision : 0
Maximum VLANs supported locally : 1005
Number of existing VLANs : 8
VTP Operating Mode : Server
VTP Domain Name : cisco
VTP Pruning Mode : Enabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0xA4 0x18 0x78 0x52 0x5A 0x1B 0x2E 0x14
Configuration last modified by 0.0.0.0 at 5-28-01 05:17:02
Local updater ID is 10.10.10.1 on interface Vl1 (lowest numbered VLAN interface)
```

1. Issue the **show vlan** command, to check the VLAN information.

```
Switch# show vlan

VLAN Name                Status    Ports
-----
1    default                active    Gi1/1, Gi1/2, Gi3/1, Gi3/2
                    Gi3/3, Gi3/4, Gi3/5, Gi3/6
                    Gi3/7, Gi3/8, Gi3/9, Gi3/10
                    Gi3/11, Gi3/12, Gi3/13, Gi3/14
                    Gi3/15, Gi3/16, Gi3/17, Gi3/18

!--- Output suppressed.

VLAN Name                Status    Ports
-----
1002 fddi-default          act/unsup
1003 token-ring-default  act/unsup
1004 fddinet-default     act/unsup
1005 trnet-default       act/unsup

VLAN Type  SAID          MTU   Parent  RingNo BridgeNo  Stp   BrdgMode Trans1 Trans2
-----
1    enet   100001       1500   -       -       -       -       -       0     0
1002 fddi   101002       1500   -       -       -       -       -       0     0
1003 tr    101003       1500   -       -       -       -       -       0     0
1004 fdnet 101004       1500   -       -       -       ieee   -       0     0
1005 trnet 101005       1500   -       -       -       ibm    -       0     0

Primary Secondary Type          Ports
-----
```

2. VLANs in Integrated Cisco IOS Software (Native Mode) can be created in either VLAN database mode or global configuration mode. To enter VLAN database mode, issue the **vlan database** command in privileged mode.

```
Switch# vlan database
```

```
Switch(vlan)#
```

3. Issue the **vlan *vlan_number*** command, to configure a VLAN.

```
Switch(vlan)# vlan 2
```

```
VLAN 2 added:  
Name: VLAN0002
```

```
Switch(vlan)# apply
```

```
APPLY completed.
```

Note: You can either issue the **apply** command or exit out of VLAN database mode, for the configuration to take effect. (The **end** keyword and **Ctrl-Z** exit methods do not work in VLAN database mode.) Issue the **exit** command to exit out of VLAN database mode.

VLAN configuration in global configuration mode is done in this manner:

```
Switch(config)# vlan 3
```

```
Switch(config-vlan)# exit
```

```
Switch(config)#
```

4. Issue the **show run** command, to view VLANs numbered higher than 1005 in the running configuration.

```
Switch# show running-config
```

```
Building configuration...
```

```
Current configuration : 2975 bytes  
!  
version 12.1  
no service pad  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
service compress-config  
!  
hostname Switch  
!  
!  
ip subnet-zero  
!  
spanning-tree extend system-id  
!  
redundancy  
mode rpr  
main-cpu  
auto-sync standard  
!  
!  
vlan 2000  
!  
interface GigabitEthernet1/1
```

```
!  
interface GigabitEthernet1/2  
!
```

!--- Output suppressed.

In Integrated Cisco IOS Software (Native Mode), interfaces are in the shutdown state by default, unlike in CatOS-based switches. In CatOS, the port becomes active if it senses the presence of a physical link.

By default, Integrated Cisco IOS Software (Native Mode) interfaces are Layer 2 (L2) interfaces on Catalyst 3550, 3750, and 4500 series switches; and they are L3 interfaces on Catalyst 6000/6500 series switches. You can configure the interface as a L2 interface with the **switchport** command in interface configuration mode. This command must be entered prior to the assignment of a VLAN, if the interface is in L3 mode. The command to assign an interface to a VLAN is **switchport access vlan *vlan_number*** .

Note: If the interface is configured as a L3 interface (the **no switchport** command is configured), it can not be assigned to a VLAN.

In order to associate the ports to VLANs in Integrated Cisco IOS Software (Native Mode), this minimum configuration is required:

```
Switch(config)# interface gigabitEthernet 3/1  
  
Switch(config-if)# switchport  
  
!--- This command is required if the interface is in L3 mode.  
  
Switch(config-if)# switchport access vlan 2  
  
Switch(config-if)# no shutdown
```

Issue the **show interface gigabitEthernet *module/interface* switchport** command, to check the L2 interface status.

```
Switch# show interface gigabitEthernet 3/1 switchport  
  
Name: Gi3/1  
Switchport: Enabled  
Administrative Mode: dynamic auto  
Operational Mode: static access  
Administrative Trunking Encapsulation: negotiate  
Operational Trunking Encapsulation: native  
Negotiation of Trunking: On  
Access Mode VLAN: 2 (VLAN0002)  
Trunking Native Mode VLAN: 1 (default)  
Voice VLAN: none  
Administrative private-vlan host-association: none  
Administrative private-vlan mapping: none  
Administrative private-vlan trunk native VLAN: none  
Administrative private-vlan trunk encapsulation: dot1q  
Administrative private-vlan trunk normal VLANs: none  
Administrative private-vlan trunk private VLANs: none  
Operational private-vlan: none  
Trunking VLANs Enabled: ALL  
Pruning VLANs Enabled: 2-1001  
Capture Mode Disabled  
Capture VLANs Allowed: ALL  
Voice VLAN: none (Inactive)  
Appliance trust: none
```

If the port is setup as a trunk (a port that can carry more than one VLAN), then the **switchport trunk native vlan** command is useful if the Native VLAN of the interface has been changed or needs to be changed from its defaults. The Native VLAN is the one that is used if the interface will become a L2 interface. If you do not explicitly define a Native VLAN, VLAN 1 becomes the Native VLAN by default. Be aware that an 802.1Q header is not added when data is sent on the Native VLAN. Ensure that the trunk ports on both of the connected devices have the same Native VLAN. Mismatch in Native VLANs can cause InterVLAN routing issues, among other things.

This message appears when the Native VLAN is mismatched on the two Cisco switches:

```
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet1/1 (2),
with D-R3550-9B GigabitEthernet0/1 (1)
```

In that example message, the Native VLAN is 2 on one of the switches, but the neighboring switch has Native VLAN 1.

Issue the **show interfaces *module/interface* trunk** command to see the Native VLAN, encapsulation, and trunking VLAN information.

```
Switch# show interfaces gigabitEthernet 3/1 trunk

Port Mode Encapsulation Status Native vlan
Gi3/1 on 802.1q trunking 1
  Port Vlans allowed on trunk
Gi3/1 1-4094
  Port Vlans allowed and active in management domain
Gi3/1 1-4,2000,3000
  Port Vlans in spanning tree forwarding state and not pruned
Gi3/1 none
```

If you use the default configuration, Native VLAN is set to 1. There is a way to change the Native VLAN on the interface that is trunking: the **switchport trunk native vlan *vlan_number*** command.

```
Switch(config)# interface gigabitEthernet 3/1

Switch(config-if)# switchport trunk native vlan 2
```

It can be verified with this command:

```
Switch# show interfaces gigabitEthernet 3/1 trunk

Port Mode Encapsulation Status Native vlan
Gi3/1 on 802.1q trunking 2
  Port Vlans allowed on trunk
Gi3/1 1-4094
  Port Vlans allowed and active in management domain
Gi3/1 1-4,2000,3000
  Port Vlans in spanning tree forwarding state and not pruned
Gi3/1 none
```

Remove VLANs

To remove a VLAN from the VLAN database, issue the **no vlan *vlan_number*** command in either VLAN database or global configuration mode. (This example uses the VLAN database mode to remove VLAN 2.)

```
Switch# vlan database
```

```
Switch(vlan)# no vlan 2

Deleting VLAN 2...

Switch(vlan)# apply

APPLY completed.
```

The global configuration mode does not log any message on the console that the VLAN has been deleted. However, you can issue the **show vlan** command to ensure that the VLAN has been deleted.

Troubleshooting Tips

This section provides troubleshooting tips for common problems that you might encounter while you are creating VLANs on Catalyst switches running Integrated Cisco IOS Software (Native Mode).

On switches running Integrated Cisco IOS Software (Native Mode), the switch itself can be used for InterVLAN routing (instead of using an external router). When a Switch Virtual Interface (SVI) is created, it does not automatically create a VLAN in the L2 database. For an SVI to come up, a VLAN has to be created in VLAN database mode or (in later Cisco IOS software releases) in global configuration mode. At least one port should be a member of that VLAN and have an active device connected to it, in order for the SVI to be fully active (administratively up and line protocol up).

This same issue applies when you are copying configurations from a different switch or restoring configurations with VLANs that were created in VLAN database mode. You must also replace the VLAN database file (vlan.dat), or you must recreate the VLANs as shown in the previous procedure. Copying the configuration from another switch does not copy the VLAN database.

If the L2 VLAN has not been created on the switch then, when the configuration is applied to the switch, SVI interfaces show as UP/DOWN in the **show ip interface brief** command. Ensure that all previous VLANs that were created in VLAN database mode or global configuration mode still exist after the configuration is copied to the switch.

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Related Information

- [Configuring InterVLAN Routing Using an Internal Router \(Layer 3 Card\) on Catalyst 5500/5000 and 6500/6000 Switches That Run CatOS System Software](#)
- [Configuring InterVLAN Routing and ISL/802.1Q Trunking on a Catalyst 2900XL/3500XL/2950 Switch Using an External Router](#)
- [Cisco IOS Desktop Switching Command Reference](#)
- [Index – Catalyst 6500 Series Command Reference, 5.5](#)

- **Understanding and Configuring VLAN Trunk Protocol (VTP)**
 - **LAN Product Support Pages**
 - **LAN Switching Support Page**
 - **Technical Support & Documentation – Cisco Systems**
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