



# Release Notes for the Catalyst 2950 Switch Cisco IOS Release 12.1(6)EA2

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## December 2001

Cisco IOS Release 12.1(6)EA2 runs on Catalyst 2950 switches.

These release notes include important information about this IOS release and any limitations, restrictions, and caveats that apply to it. To verify that these are the correct release notes for your switch:

- If you are installing a new switch, refer to the IOS release label on the rear panel of your switch.
- If your switch is on and running, you can use the **show version** user EXEC command. See the [“Upgrading the Switch Software” section on page 25](#).
- If you are upgrading to a new release, refer to the software upgrade filename for the IOS version.

This IOS release is part of a special release of Cisco IOS software that is not released on the same 8-week maintenance cycle that is used for other platforms. As maintenance releases and future IOS releases become available, they will be posted to Cisco.com in the Cisco IOS software area.

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**Corporate Headquarters:**  
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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## System Requirements

This section describes these system requirements for IOS Release 12.1(6)EA2:

- [“Hardware Supported” section on page 2](#)
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- [“Hardware and Software Requirements for the Cluster Management Suite” section on page 3](#)

## Hardware Supported

Table 1 lists the hardware supported by this IOS release.

**Table 1 Hardware Supported**

Hardware	Description
Catalyst 2950C-24	24 fixed autosensing 10/100 Ethernet ports and 2 100BASE-FX ports
Catalyst 2950T-24	24 fixed autosensing 10/100 ports and 2 fixed autosensing 10/100/1000 Ethernet ports <sup>1</sup>
Catalyst 2950G-12-EI	12 fixed autosensing 10/100 Ethernet ports and 2 GBIC <sup>2</sup> -based Gigabit Ethernet module slots
Catalyst 2950G-24-EI	24 fixed autosensing 10/100 Ethernet ports and 2 GBIC-based Gigabit Ethernet module slots
Catalyst 2950G-48-EI	48 fixed autosensing 10/100 Ethernet ports and 2 GBIC-based Gigabit Ethernet module slots
Catalyst 2950G-24-EI-DC	24 fixed autosensing 10/100 Ethernet ports and 2 GBIC-based Gigabit Ethernet module slots with DC-input power
GBIC Modules	<ul style="list-style-type: none"> <li>• 1000BASE-SX GBIC</li> <li>• 1000BASE-LX/LH GBIC</li> <li>• 1000BASE-ZX GBIC</li> <li>• GigaStack GBIC</li> </ul>
Redundant power system	Cisco RPS 300 Redundant Power System

1. When the 10/100/1000 ports are set to 10 or 100 Mbps, they can operate in either half- or full-duplex mode, but when they are set to 1000 Mbps, they can operate only in full-duplex mode.
2. GBIC=Gigabit Interface Converter

## Hardware Not Supported

Table 2 lists the hardware not supported by Cisco IOS Release 12.1(6)EA2.

**Table 2** Hardware Not Supported

Hardware	Description
Catalyst 2950-12	12 fixed autosensing 10/100 Ethernet ports
Catalyst 2950-24	24 fixed autosensing 10/100 Ethernet ports
GBIC Module	1000BASE-T GBIC (part number WS-G4582)
Redundant power system	Cisco RPS 600 Redundant Power System

## Hardware and Software Requirements for the Cluster Management Suite

The minimum PC requirement is a Pentium processor running at 233 MHz with 64 MB of DRAM. The minimum UNIX workstation requirement is a Sun Ultra 1 running at 143 MHz with 64 MB of DRAM. Table 3 lists the recommended platforms.

These operating systems are supported for web-based management:

- Microsoft Windows 2000
- Microsoft Windows 95 (Service Pack 1 required)
- Microsoft Windows 98, second edition
- Microsoft Windows NT 4.0 (Service Pack 3 or higher required)
- Solaris 2.5.1 or higher, with the Sun-recommended patch cluster for that operating system and Motif library patch 103461-24

**Table 3** Recommended Platform Configuration for Web-Based Management

OS	Processor Speed	DRAM	Number of Colors	Resolution	Font Size
Windows NT 4.0 <sup>1</sup>	Pentium 300 MHz	128 MB	65536	1024 x 768	Small
Solaris 2.5.1	Sparc 333 MHz	128 MB	Most colors for applications	—	Small (3)

1. Service Pack 3 or higher required

## Browser Support

You can access the web-based interfaces through the browsers listed in Table 4, which also lists the configuration that yields the best results for web-based management. The switch checks the browser version when starting a session to ensure that the browser is supported. If the browser is not supported, the switch displays an error message, and the session does not start.

**Table 4** Browser Support for Web-Based Management

Browser	Minimum Version	Supported Versions
Netscape Communicator	4.61 <sup>1</sup>	4.61, 4.7x
Internet Explorer <sup>2</sup>	4.01a	4.01a, 5.0, 5.5 (Service Pack 1 or higher)

1. Netscape Communicator 4.6 and 6.0 are not supported.
2. Not supported on Solaris 2.5.1 or higher.

**Note**

In Cluster Management displays, Internet Explorer versions 4.01 and 5.0 might not display edge devices that are not connected to the command switch. Other functionality is similar to that of Netscape Communicator.

## Installing the Required Plug-In

A Java plug-in is required for the browser to access the Java-based Cluster Management Suite (CMS). Download and install the plug-in before you start CMS. Each platform, Windows and Solaris, supports three plug-in versions. For information on the supported plug-ins, see the “[Windows 2000, Windows 95, Windows 98, and Windows NT 4.0 Platforms](#)” section on page 5 and the “[Solaris Platforms](#)” section on page 5.

You can download the recommended plug-ins from this URL:

<http://www.cisco.com/pcgi-bin/tablebuild.pl/java>

**Note**

Uninstall older versions of the Java plug-ins before installing the Java plug-in.

If the Java applet does not initialize after you have installed the plug-in, open the Java Plug-in Control Panel (**Start > Programs > Java Plug-in Control Panel**), and verify these settings:

In the Proxies tab, verify that the **Use browser settings** is checked and that no proxies are enabled.

**Note**

If you are running McAfee VirusScan on Windows 2000 and the plug-in takes a long time to load, you can speed up CMS operation by disabling the VirusScan Internet Filter option, the Download Scan option, or both.

From the Start menu, disable the options by selecting **Start > Programs > Network Associates > Virus Scan Console > Configure**.

or

From the taskbar, right-click the Virus Shield icon, and in the Quick Enable menu, disable the options by deselecting **Internet Filter** or **Download Scan**.

## Windows 2000, Windows 95, Windows 98, and Windows NT 4.0 Platforms

These Java plug-ins are supported on the Windows platform:

- Java plug-in 1.3.1
- Java plug-in 1.3.0
- Java plug-in 1.2.2\_05

You can download these plug-ins from this URL:

<http://www.cisco.com/pcgi-bin/tablebuild.pl/java>



### Note

If you start CMS without having installed the required Java plug-in, the browser automatically detects this. If you are using a supported Internet Explorer browser, it automatically downloads and installs the Java plug-in 1.3.0 (default). If you are using a supported Netscape browser, the browser displays a Cisco.com page that contains the Java plug-in and installation instructions. If you are using Windows 2000, Netscape Communicator might not detect the missing Java plug-in.

## Solaris Platforms



### Caution

These Java plug-ins are supported on the Solaris platform:

To avoid performance and compatibility issues, do not use Java plug-ins later than Java plug-in 1.3.1.

- Java plug-in 1.2.2\_07
- Java plug-in 1.3.0
- Java plug-in 1.3.1

You can download these plug-ins and instructions from this URL:

<http://www.cisco.com/pcgi-bin/tablebuild.pl/java>

To install the Java plug-in, follow the instructions in the README\_FIRST.txt file.

## Creating Clusters with Different Releases of IOS Software

When a cluster consists of Catalyst 3550 switches and a mixture of other Catalyst switches, we strongly recommend using only the Catalyst 3550 switches as the command and standby command switches. When the command switch is a Catalyst 3550 switch, all standby command switches must also be Catalyst 3550 switches. The Catalyst 3550 switch that has the latest software should be the command switch.

If your cluster has Catalyst 2950, Catalyst 2900 XL, and Catalyst 3500 XL switches, the Catalyst 2950 switch should be the command switch. The Catalyst 2950 switch that has the latest software should be the command switch.

If your switch cluster has Catalyst 1900, Catalyst 2820, Catalyst 2900 XL, and Catalyst 3500 XL switches, either the Catalyst 2900 XL or Catalyst 3500 XL should be the command switch. The Catalyst 2900 or 3500 XL switch that has the latest software should be the command switch.

Table 5 lists the cluster capabilities and software versions for the switches.

**Table 5** *Switch Software and Cluster Capability*

Switch	IOS Release	Cluster Capability
Catalyst 3550	Release 12.1(4)EA1 or later	Member or command switch
Catalyst 3500 XL	Release 12.0(5.1)XU or later	Member or command switch
Catalyst 2950	Release 12.0(5.2)WC(1) or later	Member or command switch
Catalyst 2900 XL (8-MB switches)	Release 12.0(5.1)XU or later	Member or command switch
Catalyst 2900 XL (4-MB switches)	Release 11.2(8.5)SA6 (recommended)	Member switch only
Catalyst 1900 and 2820	Release 9.00(-A or -EN)	Member switch only

Some versions of the Catalyst 2900 XL software do not support clustering, and if you have a cluster with switches that are running different versions of IOS software, software features added on the latest release might not be reflected on switches running the older versions. For example, if you start Visual Switch Manager (VSM) on a Catalyst 2900 XL switch running Release 11.2(8)SA6, the windows and functionality can be different from a switch running Release 12.0(5)WC(1) or later.

The CMS is not forward-compatible, which means that if a member switch is running a software version later than the release running on the command switch, the new features are not available on the member switch. If your member switch is a new device that is running a software release later than the software release on the command switch, it appears as an unknown device in the Front Panel view. You cannot configure any parameters or generate a report through CMS for that member; instead, you must launch the Device Manager application to perform configuration and to obtain reports for that member.

## Features

For a detailed list of key features for this software release, refer to the *Catalyst 2950 Desktop Switch Software Configuration Guide*.

## Limitations and Restrictions

Read this section before you begin working with the switches. Some features might not work as documented, and some features could be affected by recent changes to the switch hardware or software.

## Port Configuration Conflicts

Certain combinations of port features create configuration conflicts (see Table 6). If you try to enable incompatible features, CMS issues a warning message, and you cannot make the change. Reload the page to refresh CMS.

In Table 6, **No** means that the two referenced features are incompatible and should not both be enabled; **Yes** means that both can be enabled at the same time and do not cause an incompatibility conflict. A dash means not applicable.

**Table 6** *Conflicting Features*

	Port Group	Port Security	SPAN Source Port	SPAN Destination Port	Connect to Cluster?	Protected Port	802.1X Port
Port Group	–	No	Yes	No	Yes	Yes	No
Port Security	No	–	Yes	No	Yes	No	No
SPAN Source Port	Yes	Yes	–	No	Yes	Yes <sup>1</sup>	Yes
SPAN Destination Port	No	No	No	–	Yes	Yes	No
Connect to Cluster	Yes	Yes	Yes	Yes	–	Yes	–
Protected Port	Yes	No	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes	–	–
802.1X Port	No	No	Yes	No	–	–	–

1. Switch Port Analyzer (SPAN) can operate only if the monitor port or the port being monitored is not a protected port.

## SPAN Limitations

When using the Switched Port Analyzer (SPAN) feature, the monitoring port receives copies of sent and received traffic for all monitored ports. If the monitoring port is 50 percent oversubscribed for a sustained period of time, it will probably become congested. One or more of the ports being monitored might also experience a slowdown.

## Important Notes

This section describes important information related to this IOS release.

### Read-Only Mode in CMS

CMS provides two levels of access to the configuration options. If your privilege level is 15, you have read-write access to CMS. If your switch privilege level is from 1 to 14, you have read-only access to CMS. In the read-only mode, some **show** commands are not available when these switches are running these software releases:

- Catalyst 2900 XL or Catalyst 3500 XL member switches running Cisco IOS Release 12.0(5)WC2 or earlier
- Catalyst 2950 member switches running Cisco IOS Release 12.0(5)WC2 or earlier
- Catalyst 3550 member switches running Cisco IOS Release 12.1(6)EA1 or earlier

Therefore, the windows that use these **show** commands do not display data. These windows display an error message.

In the Front Panel view or Topology view, CMS does not display error messages. In the Front Panel view, if the switch is running one of the software releases listed previously, the device LEDs do not appear. In Topology view, if the member is an LRE switch, the customer premises equipment (CPEs) connected to the switch do not appear. The Bandwidth and Link graphs also do not appear in these views.

To view switch information, you need to upgrade the member switch software. For information about upgrading switch software, see the [“Upgrading the Switch Software” section on page 25](#).

## Connecting Catalyst 2950G-24-EI-DC Switches to DC Power

When wiring the DC-input power source, you must use 18-gauge copper wire instead of the 12- or 14-gauge wire specified in the *Catalyst 2950 Desktop Switch Hardware Installation Guide*.

## Connecting Catalyst 2950G-24-EI-DC Switches to Compatible Devices

When connecting the 10/100 ports on Catalyst 2950G-24-EI-DC switches to compatible devices, if intrabuilding lightning surge protection is required, you must use shielded twisted-pair, Category 5 cables. Make sure that the cable shield is terminated properly at both ends.

## Changing the Management VLAN

The **management** interface configuration command is not supported in Release 12.1(6)EA2 or later. To shut down the current management VLAN interface and to enable the new management VLAN interface, use the **shutdown** and **no shutdown** interface configuration commands. Refer to the *Catalyst 2950 Desktop Switch Command Reference* for information about using the **shutdown** interface configuration command.

## Documentation Notes

This section describes documentation notes related to this IOS release.

### Correction to the Software Documentation

The **match** class-map configuration command is documented incorrectly in the *Catalyst 2950 Desktop Switch Software Configuration Guide* and the *Catalyst 2950 Desktop Switch Command Reference*. This is the correct command:

```
match access-group {acl-index | name acl-name}
```

### Addition to the Command Reference

The **interface range** global configuration command was omitted in the *Catalyst 2950 Desktop Switch Command Reference*.

## interface range

Use the **interface range** global configuration command to enter interface range configuration mode and to execute a command on multiple ports at the same time. Use the **no** form of this command to remove an interface range.

**interface range** *port-range*

**no interface range** *port-range*

<b>Syntax Description</b>	<i>port-range</i>	Port range. For a list of valid values for <i>port-range</i> , see the “Usage Guidelines” section.
---------------------------	-------------------	--

<b>Defaults</b>	This command has no default setting.
-----------------	--------------------------------------

<b>Command Modes</b>	Global configuration
----------------------	----------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.1(6)EA2	This command was first introduced.

**Usage Guidelines** When you enter interface range configuration mode, all interface parameters that you enter are attributed to all interfaces within the range.

For VLANs, you can use the **interface range** command only on existing VLAN interfaces. To display VLAN interfaces, enter the **show running-config** privileged EXEC command. VLANs not displayed cannot be used in the **interface range** command. The commands entered under the **interface range** command are applied to all existing VLAN interfaces in the range.

All configuration changes made to an interface range are saved to nonvolatile RAM (NVRAM), but the interface range itself is not saved to NVRAM.

You can enter the interface range by specifying up to five interface ranges.

You can define up to five interface ranges with a single command, with each range separated by a comma.

All interfaces in a range must be the same type; that is, all Fast Ethernet ports, all Gigabit Ethernet ports, all EtherChannel ports, or all VLANs.

These are the valid values for *port-range* type and interface:

- **vlan** *vlan-id*, where *vlan-id* is from 1 to 1001
- **port-channel** *port-channel-number*, where *port-channel-number* is from 1 to 6
- **fastethernet** *interface-id*
- **gigabitethernet** *interface-id*

For physical interfaces, the *interface-id* is defined as a slot/number (where slot is always 0 for the Catalyst 2950 switch), and the range can be entered as *type 0/number - number* (for example, **gigabitethernet0/1 - 2**).

When you define a range, you must enter a space before and after the hyphen (-):

```
interface range gigabitethernet0/1 - 2
```

A single interface can also be specified in *port-range* (this would make the command similar to the **interface interface-id** global configuration command).

### Examples

This example shows how to use the **interface range** command to enter interface range configuration mode to apply commands to two ports:

```
Switch(config)# interface range gigabitethernet0/1 - 2
Switch(config-if-range)#
```

### Related Commands

Command	Description
<b>show running-config</b>	Displays the configuration information running on the switch. For syntax information, select <b>Cisco IOS Configuration Fundamentals Command Reference for Release 12.1 &gt; Cisco IOS File Management Commands &gt; Configuration File Commands</b> .

## Correction to the Software Configuration Guide

The procedures in the "Recovering from a Command Switch Failure," section in Chapter 14 of the *Catalyst 2950 Desktop Switch Software Configuration Guide* are incorrect. These are the correct procedures:

### Replacing a Failed Command Switch with a Cluster Member

To replace a failed command switch with a command-capable member in the same cluster, follow these steps:

- 
- Step 1** Disconnect the command switch from the member switches, and physically remove it from the cluster.
  - Step 2** Insert the member switch in place of the failed command switch, and duplicate its connections to the cluster members.
  - Step 3** Start a CLI session on the new command switch.

You can access the CLI by using the console port or, if an IP address has been assigned to the switch, by using Telnet. For details about using the console port, refer to the switch hardware installation guide.

- Step 4** At the switch prompt, enter privileged EXEC mode:

```
Switch> enable
Switch#
```

- Step 5** Enter the password of the *failed command switch*.

- Step 6** Enter global configuration mode.

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 7** Remove the member switch from the cluster.

```
Switch(config)# no cluster commander-address
```

**Step 8** Return to privileged EXEC mode.

```
Switch(config)# end
Switch#
```

**Step 9** Use the setup program to configure the switch IP information.

This program prompts you for IP address information and passwords. From privileged EXEC mode, enter **setup**, and press **Return**.

```
Switch# setup
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: y

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system

Would you like to enter basic management setup? [yes/no]:
```

**Step 10** Enter **Y** at the first prompt.

The prompts in the setup program vary depending on the member switch that you selected to be the command switch:

```
Continue with configuration dialog? [yes/no]: y
or
Configuring global parameters:
```

If this prompt does not appear, enter **enable**, and press **Return**. Enter **setup**, and press **Return** to start the setup program.

**Step 11** Respond to the questions in the setup program.

When prompted for the host name, recall that on a command switch, the host name is limited to 28 characters; on a member switch to 31 characters. Do not use *-n*, where *n* is a number, as the last characters in a host name for any switch.

When prompted for the Telnet (virtual terminal) password, recall that it can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

**Step 12** When prompted for the **enable secret** and **enable** passwords, enter the passwords of the *failed command switch* again.

**Step 13** When prompted, enable the switch as the cluster command switch, and press **Return**.

**Step 14** When prompted, assign a name to the cluster, and press **Return**.

The cluster name can be 1 to 31 alphanumeric characters, dashes, or underscores.

**Step 15** After the initial configuration displays, verify that the addresses are correct.

**Step 16** If the displayed information is correct, enter **Y**, and press **Return**.

If this information is not correct, enter **N**, press **Return**, and begin again at Step 9.

**Step 17** Start your browser, and enter the IP address of the new command switch.

- Step 18** From the Cluster menu, select **Add to Cluster** to display a list of candidate switches to add to the cluster.
- 

## Replacing a Failed Command Switch with Another Switch

To replace a failed command switch with a switch that is command-capable but not part of the cluster, follow these steps:

- Step 1** Insert the new switch in place of the failed command switch, and duplicate its connections to the cluster members.

- Step 2** Start a CLI session on the new command switch.

You can access the CLI by using the console port or, if an IP address has been assigned to the switch, by using Telnet. For details about using the console port, refer to the switch hardware installation guide.

- Step 3** At the switch prompt, enter privileged EXEC mode:

```
Switch> enable
Switch#
```

- Step 4** Enter the password of the *failed command switch*.

- Step 5** Use the setup program to configure the switch IP information.

This program prompts you for IP address information and passwords. From privileged EXEC mode, enter **setup**, and press **Return**.

```
Switch# setup
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: y

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system

Would you like to enter basic management setup? [yes/no]:
```

- Step 6** Enter **Y** at the first prompt.

The prompts in the setup program vary depending on the switch that you selected to be the command switch:

```
Continue with configuration dialog? [yes/no]: y
or
Configuring global parameters:
```

If this prompt does not appear, enter **enable**, and press **Return**. Enter **setup**, and press **Return** to start the setup program.

- Step 7** Respond to the questions in the setup program.

When prompted for the host name, recall that on a command switch, the host name is limited to 28 characters. Do not use *-n*, where *n* is a number, as the last characters in a host name for any switch.

When prompted for the Telnet (virtual terminal) password, recall that it can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

- Step 8** When prompted for the **enable secret** and **enable** passwords, enter the passwords of the *failed command switch* again.
- Step 9** When prompted, enable the switch as the cluster command switch, and press **Return**.
- Step 10** When prompted, assign a name to the cluster, and press **Return**.  
The cluster name can be 1 to 31 alphanumeric characters, dashes, or underscores.
- Step 11** When the initial configuration displays, verify that the addresses are correct.
- Step 12** If the displayed information is correct, enter **Y**, and press **Return**.  
If this information is not correct, enter **N**, press **Return**, and begin again at Step 9.
- Step 13** Start your browser, and enter the IP address of the new command switch.  
From the Cluster menu, select **Add to Cluster** to display a list of candidate switches to add to the cluster.

## Caveats

### Open Caveats

This section describes possible unexpected activity by IOS Release 12.1(6)EA2:

- CSCdw29898  
When you are using the Remote Authentication Dial-In User Service (RADUIS) client for Extensible Authentication Protocol (EAP) authentication, the Microsoft Windows2000 Internet Authentication Server authenticates all valid users, regardless of the password. Therefore, you can enter any password to authenticate an 802.1X port.  
The workaround is to use the Cisco Secure Access Control Server version 3.0 for RADIUS-EAP authentication.
- CSCdw15773  
If the multicast VLAN registration (MVR) query-response time on an MVR receiver port is set to the default value (0.5 seconds), when the receiver port leaves a multicast group and rejoins it, the receiver port might not send or receive traffic for up to 10 seconds.  
The workaround is to enter the **mvr querytime 100** global configuration command to set the MVR query-response time to 10 seconds, which is the general-query-response time to prune member ports.
- CSCdw13531  
If CISCO-FLASH-MIB is included in the MIB walk on a Catalyst 2950 switch, the MIB walk halts in CISCO-FLASH-MIB.  
The workaround is to remove CISCO-FLASH-MIB from the MIB walk.
- CSCdw06738  
Traffic interruption can occur for several seconds during a cross-stack UplinkFast (CSUF) root-port transition.  
There is no workaround.

- CSCdw19137  
When you are using the AVVID Voice Wizard in CMS, some cluster members might fail if the client PC or workstation running CMS is not connected to the cluster through the command switch.  
The workaround is to make the command switch the entry point for the client PC or workstation running CMS.
- CSCdv90806  
On the Catalyst 2950 switches, you can monitor incoming traffic on multiple ports by using the CLI; however, you can only select one port if you are using CMS.  
The workaround is to use the CLI to monitor incoming traffic on multiple ports.
- CSCdw11223  
If you configure an SNMP community string larger than 123 characters and then configure a VLAN with an ID greater than 99, the Catalyst 2950 switch resets and restarts.  
The workaround is to configure an SNMP community string up to 123 characters.
- CSCdw10837  
When a Catalyst 2950 cluster command-switch is running Cisco IOS Release 12.1(6)EA2 and you enter the **no cluster commander-address** global configuration command on a member switch of this cluster, the member switch cannot be removed from the cluster if there are any member switches beyond that member switch.  
The workaround is to enter the **no cluster member n** global configuration command on the command switch to remove the member from the cluster.
- CSCdt27223  
When you enter the **show controllers ethernet-controller interface-id** or **show interfaces interface-id counters** privileged EXEC command, if a large number of erroneous frames are received on an interface, the receive-error counts might be smaller than the actual values, and the receive-unicast frame count might be larger than the actual frame count.  
There is no workaround.
- CSCdt09918  
If the cluster command-switch is a Catalyst 2900 XL switch, a Catalyst 2950 switch running software earlier than Release 12.1(6)EA2, or a Catalyst 3500 XL switch that is connected to a Catalyst 2950 switch running Release 12.1(6)EA2 or later or to a Catalyst 3550 switch, the command switch does not find any cluster candidates beyond the Catalyst 2950 or 3550 switch if it is not a member of the cluster.  
The workaround is to add the Catalyst 2950 or 3550 switch to the cluster. You can then see any cluster candidates connected to it.
- CSCdw06074  
Layer 3 CPU packets from a SPAN-source port configured to monitor transmitted traffic are not mirrored to the SPAN-destination port on a Catalyst 2950 switch.  
There is no workaround.
- CSCdv82224  
If a stack contains Catalyst 3550, 3500 XL, or 2900 XL switches, then the cross-stack UplinkFast (CSUF) feature does not work if the management VLAN on these switches is changed to a VLAN other than VLAN 1.

The workaround is to ensure that the management VLAN of all the Catalyst 3550, 3500 XL, and 2900 XL switches in the stack is set to VLAN 1.

- CSCdv14833

When the **show running-config** or **write memory** privileged EXEC command is entered, it might take up to 8 seconds before the current configuration appears on the Catalyst 2950 switch. This is because it takes a large number of system resources to execute this command.

There is no workaround.

- CSCdv02941

In some network topologies, when UplinkFast is enabled on all Catalyst 2950 switches and BackboneFast is not enabled on all switches, a temporary loop might be caused when the STP root switch is changed.

The workaround is to enable BackboneFast on all switches.

- CSCdv19671

At times, the Window-XP pop-up window might not appear while authenticating a client (supplicant) because the user information is already stored in Windows XP. However, the Extensible Authentication Protocol over LAN (EAPOL) response to the switch (authenticator) might have an empty userid that causes the 802.1X port to be deauthenticated.

The workaround is to manually re-initiate authentication by either logging off or detaching the link and then re-connecting it.

- CSCdv67047

The **ip http authentication enable** global configuration command is not saved to the configuration file because this is the default configuration. Therefore, this configuration is lost after a reboot.

The workaround is to manually enter the command again after a reboot.

- CSCdv56582

In the CMS topology view, icons for the fiber-optic, ATM, and FDDI links are not visible.

There is no workaround.

- CSCdv44005

A Catalyst 2950 command switch running IOS Release 12.1(6)EA2 cannot use the **rcommand** privileged EXEC command to start a Telnet session on a Catalyst 3550 member running IOS Release 12.1(4)EA1, when the **aaa authorization exec default group tacacs+** global configuration command is configured on both the command switch and the member.

The workaround is to upgrade the Catalyst 3550 switch to IOS Release 12.1(6)EA1a.

- CSCdv34505

The Catalyst 2950 command switch might not show the Catalyst 1900, Catalyst 2820, and Catalyst 2900 XL 4-MB (models C2908-XL, C2916M-XL, C2924C-XL, and C2924-XL) switches as candidates even though their management VLAN is the same as the command switch. This occurs only when their management VLAN is not VLAN 1.

There is no workaround.

- CSCdv62271

There might be a link on the Fast Ethernet port of the Catalyst 2950switch when it is forced to 10 Mbps and full-duplex mode and its link partner is forced to 100 Mbps and forced duplex mode. The LED on the Catalyst 2950 switch might display the link, and the error counters might increment.

The workaround is to configure both sides of a link to the same speed or use auto-negotiation.

- CSCdu83640

The receive count output for the **show controllers ethernet-controller interface-id** privileged EXEC command shows the incoming packets count before the ASIC makes a decision of whether to drop the packet or not. Therefore, for ports in the STP blocking states, even though the receive count shows incoming frames, the packet is not forwarded to the other port.

There is no workaround.

- CSCdv49871

A Catalyst 2950 command switch can discover only the first Catalyst 3550 switch if the link between the Catalyst 3550 switches is an 802.1Q trunk and the native VLAN is not the same as the management VLAN of the Catalyst 2950 switch or if the link between the Catalyst 3550 switches is an ISL trunk and the management VLAN is not VLAN 1.

The workaround is to connect Catalyst 3550 switches by using the access link on the command switches management VLAN or to configure an 802.1Q trunk with a native VLAN that is the same as the management VLAN of the command switch.

- CSCdv27247

If two Catalyst 2950 switches are used in a network and if access ports are used to connect two different VLANs whose VLAN IDs are separated by the correct multiple of 64, it is possible to create a situation where the two switches use the same bridge ID in the same spanning-tree instances. This might cause a loss of connectivity in the VLAN as the spanning tree blocks the ports that should be forwarding.

The workaround is to not cross-connect VLANs. For example, do not use an access port to connect VLAN 1 to VLAN 65 on either the same switch or from one switch to another switch.

- CSCdv45190

On a Catalyst 2950 switch, the Multicast VLAN Registration (MVR) receiver port joins only 255 groups when the Internet Group Management Protocol (IGMP) join message is sent to all 256 MVR groups configured. Multicast data for the 256th group is not received.

The workaround is to set the mode to **dynamic** for Catalyst 2950 switches that are connected to IGMP-capable devices. Then, MVR members can join any group but can only support 255 IP multicast streams at any given time.

- CSCdt24814 (formerly CSCdt2481)

A source-based distribution port group does not share the broadcast with all the group members. When the destination of the packets is a broadcast or unknown unicast or multicast, the packets are forwarded only on one port member of a port group, instead of being shared among all members of the port group.

There is no workaround.

- CSCdt48011

Two problems occur when the Catalyst 2950 switch is in transparent mode:

- If the switch is a leaf switch, any new VLANs added to it are not propagated upstream through VTP messages. As a result, the switch does not receive flooded traffic for that VLAN.
- If the switch is connected to two VTP servers, it forwards their pruning messages. If the switch has a port on a VLAN that is not requested by other servers through their pruning messages, it does not receive flooded traffic for that VLAN.

There is no workaround.

- CSCds20365  
Internal loopback in half-duplex mode causes input errors. We recommend that you configure the PHY to operate in full duplex before setting the internal loopback.  
There is no workaround.
- CSCdt83016  
When the Catalyst 2950 switch boots up without being configured, it prompts the user with a configuration dialog. The switch allows the user to omit the dialog and to enable traps without configuring a community string. If the host trap receiver is configured without defining the community strings, when the switch attempts to generate a trap, it fails and displays an error message.  
The workaround is to follow the configuration sequence by creating a community string before configuring traps for the host.
- CSCdr96565  
Aging of dynamic addresses does not always occur exactly after the specified aging time elapses. It might take up to three times this time period before the entries are removed from the table.  
There is no workaround.
- CSCdt48569  
If any VLAN other than VLAN 1 is configured as the management VLAN, the switch reports an incorrect shutdown for VLAN 1. VLAN 1 is not administratively down, even though the running configuration has shut down in VLAN 1.  
There is no workaround.
- CSCds68177  
The UniDirectional Link Detection (UDLD) protocol does not always detect a unidirectional link when there is a loop between the TX and RX strands on the same port (TX/RX loop condition).  
This is an intermittent problem, and there is no workaround.
- CSCds58369  
If the switch gets configured from the dynamic IP pool, a duplicate or different IP address might be assigned.  
The workaround is to make sure that the DHCP server contains reserved addresses that are bound to each switch by the switch hardware address so that the switch does not obtain its IP address from the dynamic pool.
- CSCdp67822  
CMS requires a Java plug-in from Sun Microsystems. If you are using Internet Explorer and you disable Java plug-ins by using the Java Plug-In Control Panel, the initial Splash screen shows that the plug-in and Java are enabled, but Internet Explorer fails.  
The workaround is to not disable Java plug-ins on the Java Plug-In Control Panel.

- CSCdp82224

The CMS Time Management window supports the configuration of the Network Time Protocol (NTP) and system time. When you make changes on this window from a command switch, Java propagates the changes to all cluster members. A conflict can arise if you configure NTP and also use the Set Daylight Saving Time and Set Current Time tabs.

To avoid a possible conflict, either set the system time for the entire cluster on the command switch, or configure NTP on the command switch to use an NTP server to provide time to the cluster. Do not use both methods at the same time.
- CSCdp82354

You can use Cluster Manager to configure an Hot Standby Router Protocol (HSRP) standby group and bind it to a cluster. However, you cannot use Cluster Manager to configure more than one standby group. If you want to configure more than one standby group, use the CLI.
- CSCdp70389

When changing the management VLAN on a cluster with command-switch redundancy enabled, the cluster can break if HSRP is configured on any of the cluster members in the new management VLAN.

The workaround is to not change the management VLAN to a VLAN where a member is configured as part of a standby group.
- CSCdp85954

Root guard is inconsistent when configured on a port that is in the STP blocked state at the time of configuration.
- CSCdp49419

HSRP does not support a virtual MAC address entry or a built-in address (BIA) for a cluster.
- CSCdp97517

All members of an HSRP standby group must be cluster members.
- CSCdp30543

If the storm control filter is enabled for unicast or multicast traffic and the rising threshold is reached, all traffic on the port is filtered. No unicast, multicast, or broadcast traffic is forwarded from the port.
- CSCdp87748

Cisco IOS does perform some checks on entered IP addresses. For example, it does not allow the broadcast address to be entered. However, it does not check for the broadcast address on the same subnet as the HSRP Versatile Interface Processor (VIP) or the management VLAN IP address. This means that you could configure HSRP with a virtual IP address that is the same as the network broadcast address.

There is no workaround.
- CSCdp75220

If you use the command switch Domain Name System (DNS) server name to start CMS for a member that is running an earlier software release, CMS might not display the switch image, or it might display the command switch image. This can also occur when a standby group is configured for a cluster and you access CMS by entering the command-switch IP address and not the virtual IP address.

The workaround is to always use the command-switch IP address to access CMS. If a standby group is configured for a cluster, always use the virtual IP address to access CMS.

- CSCdp62807

If you click the list of switches in CMS and press the Page Down key on the keyboard, the entire list moves to the bottom of the window. This only happens with Windows NT.

The workaround is to collapse the list into a single icon, which returns the list to the top of the window.

## Resolved Caveats

These problems were resolved in Cisco IOS Release 12.1(6)EA2:

- CSCdv35805

If you are copying the configuration file using `ciscoConfigCopyMIB` from a Catalyst 2950 switch by using Simple Network Management Protocol (SNMP) manager, the switch no longer reloads the configuration.

- CSCdv16305

A broadcast storm no longer occurs when two 100BASE-FX ports on a Catalyst 2950 switch are connected to the 100BASE-FX ports on another Catalyst 2950 switch if these ports are in trunk mode and one of the ports is administratively down.

- CSCds72421

If the management VLAN is changed to any other VLAN from VLAN 1 and VLAN 1 is shut down, the IP address configured in the new management VLAN now appears in the **show cdp neighbor detail** privileged EXEC command output.

- CSCdt57346

When you enter the **show rmon history** user EXEC command, the value for the collision is now unique for each sample.

- CSCdu09410

The `ifSpeed` of the interfaces now reports the default value of the visible bandwidth when the link is down and reports the configured and assigned values when the link is up.

- CSCdu37367

The **clear counters** and **clear counters fastethernet port** interface configuration commands now clear the port security counters. These commands also clear the other counters for the interface.

- CSCdu49099

Changing the VLAN Trunking Protocol (VTP) mode to transparent no longer causes a virtual type terminal session to lock up when executing commands, such as the **show vlan** privileged EXEC command, that require access to the VLAN- and VTP-related data.

In addition, ports that were shut down during VTP mode change now come back up automatically when VTP is stable.

- CSCdu67033

The output count displayed by the **show interface** privileged EXEC command output now appears correctly when the count is greater than 4,294,967,296 packets.

- CSCdu88701

When performing an **snmpwalk** SNMP operation on the `dot1dTpFdbTable` (1.3.6.1.2.1.17.4.3), the response no longer omits all entries of `show mac` in the display in which the first byte of the host MAC address is greater than 0x00.

- CSCdv21552  
High CPU utilization no longer occurs when a switch boots with a VLAN (without an IP address) in the shutdown state while another active VLAN has an IP address.
- CSCdv41819  
Enabling spanning-tree UplinkFast no longer causes brief spanning-tree loops if the configuration message from the root switch of the spanning tree ages out.
- CSCdt04001  
When you change the privilege level for an interface on the Catalyst 2950 switches, you can execute commands with the newly configured privilege level. The switch now saves the arguments associated with the command, and after a reload, the configured commands are executable.
- CSCdt24089  
If the Catalyst 2950 switch contains multicast addresses, the MIB walk of Dot1dTpFdbEntry no longer consumes excess CPU cycles on the switch.
- CSCdt68204  
If you continuously ping a switch from a PC and the links from the switch to the network are brought down, when the link from the switch to the network is restored, pinging now resumes.
- CSCdt59751  
The **no snmp-server enable traps snmp [authentication]** global configuration command is not supported by this software release.
- CSCdu87426  
The 100BASE-FX ports in a Fast EtherChannel port group no longer loop packets when the connected device resets or reloads.
- CSCdv47498  
The SNMP walk of the Dot1dTpFdbTable no longer causes the switch to halt and put an SNMP CPU HOG error message in the logging buffer.
- CSCdv51153  
SNMP MIB variables etherStatsEntry does not display any values in Cisco IOS Release 12.0(5)XU or later.
- CSCdt88908  
When IGMP packets are received on a port for a non-existent VLAN, the Catalyst 2950 switch no longer loses buffer space on that port.
- CSCds72421  
If you shut down the management VLAN on VLAN 1 on a Catalyst 2950 switch, set the management VLAN to 999, and then again use the **shutdown** command to shut down VLAN 1, the IP address of VLAN 999 now appears correctly in the **show cdp neighbor detail** command output on a connected device.
- CSCdt74555  
When a MAC address is learned on a member of a port group created between a Catalyst 2950 and Catalyst 2900 or 3500 XL switch, the same MAC address gets deleted and relearned on another port member of the port group on the 2900 or 3500 XL switch. As a result, a real-time diagnostic message reporting this address relearning behavior no longer appears.

# Initial Configuration

You can assign IP information to your switch in one of these ways:

- Using the Setup program (switch's configuration dialog)
- Using DHCP-based auto configuration (refer to the *Catalyst 2950 Desktop Switch Software Configuration Guide*)
- Manually assigning an IP address (refer to the *Catalyst 2950 Desktop Switch Software Configuration Guide*)

## Setting Up the Catalyst 2950

The first time that you access the switch, it runs a setup program that prompts you for an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also required if you plan to use the CMS to configure and manage the switch.



### Note

If the switch will be a cluster member managed through the IP address of the command switch, it is not necessary to assign IP information or a password. If you are configuring the switch as a standalone switch or as a command switch, you must assign IP information.

Follow these steps to create an initial configuration for the switch:

### Step 1 Enter **Yes** at the first two prompts.

```
Would you like to enter the initial configuration dialog? [yes/no]: yes
```

```
At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.
```

```
Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.
```

```
Would you like to enter basic management setup? [yes/no]: yes
```

### Step 2 Enter a host name for the switch, and press **Return**.

On a command switch, the host name is limited to 28 characters; on a member switch to 31 characters. Do not use *-n*, where *n* is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

### Step 3 Enter a secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter enable secret: secret_password
```

### Step 4 Enter an enable password, and press **Return**.

```
Enter enable password: enable_password
```

**Step 5** Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

Enter virtual terminal password: *terminal-password*

**Step 6** (Optional) Configure the Simple Network Management Protocol (SNMP) by responding to the prompts.

**Step 7** Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use **vlan1** as that interface.

Enter interface name used to connect to the management network from the above interface summary: **vlan1**

**Step 8** Configure the interface by entering the switch IP address and subnet mask and pressing **Return**:

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.255.255.0
```

**Step 9** Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the CMS. In this case, the message in [Step 10](#) does not appear.

Would you like to enable as a cluster command switch? [yes/no]: **yes**

**Step 10** Assign a name to the cluster, and press **Return**.

Enter cluster name: *cluster\_name*

The cluster name can be 1 to 31 alphanumeric characters, dashes, or underscores.

The initial configuration appears:

The following configuration command script was created:

```
hostname host_name
enable secret 5 $1$Max7$Qgr9eXBhtcBJw3KK7bc850
enable password grandkey1
line vty 0 15
password grandkey
snmp-server community public
!
no ip routing

!
interface Vlan1
no shutdown
ip address 172.20.139.145 255.255.255.224
!
interface Vlan2
shutdown
no ip address
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
...<output abbreviated>
i!!!
interface GigabitEthernet0/1
```

```

!
interface GigabitEthernet0/2
!
end

```

**Step 11** These choices appear:

[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.

Enter your selection [2]:

Make your selection, and press **Return**.

---

After you complete the setup program, the switch can run the created default configuration. If you want to change this configuration or want to perform other management tasks, use one of these tools:

- CMS from your browser (See the [“Creating Clusters with Different Releases of IOS Software” section on page 5](#) and the [“Accessing CMS” section on page 23](#).)
- Command-line interface (CLI) (Refer to the software configuration guide.)

The switch software configuration guide provides more information about how to set a password to protect the switch against unauthorized Telnet access and how to access the switch if you forget the password.

## Accessing CMS

A browser plug-in is required to access CMS. See the [“Creating Clusters with Different Releases of IOS Software” section on page 5](#). After you have assigned an IP address to the switch and installed the plug-in, you can access the switch from your browser and use the Cluster Management application to configure other switches. To use the web-based tools, see the [“Hardware and Software Requirements for the Cluster Management Suite” section on page 3](#) to set up the appropriate browser options.

## Configuring Netscape Communicator (All Versions)

Follow these steps to configure Netscape Communicator:

- 
- Step 1** Start Netscape Communicator.
  - Step 2** From the menu bar, select **Edit > Preferences**.
  - Step 3** In the Preferences window, click **Advanced**.
  - Step 4** Check the **Enable Java**, **Enable JavaScript**, and **Enable Style Sheets** check boxes.
  - Step 5** From the menu bar, select **Edit > Preferences**.

- Step 6** In the Preferences window, click **Advanced Cache**, and select **Every time**.
- Step 7** Click **OK** to return to the browser Home page.
- 

## Configuring Microsoft Internet Explorer (4.01)

Follow these steps to configure Microsoft Internet Explorer 4.01:

---

- Step 1** Start Internet Explorer.
- Step 2** From the menu bar, select **View > Internet Options**.
- Step 3** In the Internet Options window, click the **Advanced** tab.
- a. Scroll through the list of options until you see Java VM. Check the **Java logging enabled** and **Java JIT compiler enabled** check boxes.
  - b. Click **Apply**.
- Step 4** In the Internet Options window, click the **General** tab.
- a. In the Temporary Internet Files section, click **Settings**.
  - b. In the Settings window, select **Every visit to the page**, and click **OK**.
- 

## Configuring Microsoft Internet Explorer (5.0)



### Note

During the installation of this browser, make sure to check the **Install Minimal or Customize Your Browser** check box. In the Component Options window in the Internet Explorer 5 section, make sure to check the **Microsoft Virtual Machine** check box to display applets written in Java.

---

Follow these steps to configure Microsoft Internet Explorer 5.0:


---

- Step 1** Start Internet Explorer.
- Step 2** From the menu bar, select **Tools > Internet Options**.
- Step 3** In the Internet Options window, click the **Advanced** tab.
- a. Scroll through the list of options until you see Microsoft VM. Check the **Java logging enabled** and **JIT compiler for virtual machine enabled** check boxes.
  - b. Click **Apply**.
- Step 4** In the Internet Options window, click the **General** tab.
- a. In the Temporary Internet Files section, click **Settings**.
  - b. In the Settings window, select **Every visit to the page**, and click **OK**.

If you are using Microsoft Internet Explorer 5.0 to make configuration changes to the switch, note that this browser does not automatically reflect the latest configuration changes. Make sure you click the browser **Refresh** button for every configuration change.

## Displaying the Access Page

After the browser is configured, display the Cluster Management Suite access page:

- 
- Step 1** Enter the switch IP address in the browser **Location** field (Netscape Communicator) or **Address** field (Internet Explorer), and press **Return**.
- Step 2** Enter your username and password when prompted. The password provides level 15 access. The Cisco Systems Access page appears. For more information on Setting Passwords and Privilege Levels, refer to the *Catalyst 2950 Desktop Switch Software Configuration Guide*.
-  **Note** If no username is configured on the switch, leave the username field blank.
- 
- Step 3** Click **Web Console** to display the appropriate CMS application.
- 

## Upgrading the Switch Software

This section provides topics about upgrading the switch software:

- [“Guidelines for Upgrading Switch Software” section on page 26](#)
- [“Overview of the Switch Upgrade Process” section on page 26](#)
- [“Upgrading the Switch Software” section on page 25](#)
- [“Downloading the New Software and TFTP Server Application to Your Management Station” section on page 28](#)
- [“Copying the Current Startup Configuration from the Switch to a PC or Server” section on page 28](#)
- [“Using Cluster Manager to Upgrade One or More Switches” section on page 29](#)
- [“Using the CLI to Upgrade a Catalyst 2950 Switch” section on page 30](#)
- [“Using the CLI to Upgrade Member Switches” section on page 32](#)



**Note** The Catalyst 2950-12 and 2950-24 switches cannot be upgraded to Cisco IOS Release 12.1(6)EA2.



**Note** Before upgrading your switch to Cisco IOS Release 12.1(6)EA2, read the [“Guidelines for Upgrading Switch Software” section on page 26](#) for important information.



**Note** For CMS instructions for upgrading switch software to this release, refer to the online help.

## Guidelines for Upgrading Switch Software

When using Cluster Manager to upgrade multiple switches from the Cisco TFTP server, the Cisco TFTP server application can handle multiple requests and sessions. When using Cluster Manager to upgrade multiple switches from the Cisco TFTP server, you must first disable the **TFTP Show File Transfer Progress** and the **Enable Logging** options to avoid TFTP server failures. If you are performing multiple-switch upgrades with a different TFTP server, it must be capable of managing multiple requests and sessions at the same time.

## Overview of the Switch Upgrade Process

The software upgrade procedure has these major steps:

- Deciding which software files to download from Cisco.com, as described in the [“Upgrading the Switch Software”](#) section on page 25.
- Downloading the .tar file from Cisco.com, as described in the [“Downloading the New Software and TFTP Server Application to Your Management Station”](#) section on page 28. This file contains the IOS image and the HTML files. From Cisco.com, you can also download a TFTP server application to copy the switch software from your PC to the switch, if necessary.

The **tar** command extracts the IOS image and the HTML files from the .tar file during the TFTP copy to the switch.

- Copying the current startup configuration file, as described in the [“Copying the Current Startup Configuration from the Switch to a PC or Server”](#) section on page 28. If the upgrade to the new software fails or if the new startup configuration fails, you can reinstall the previous version of the switch software and use the copy of the startup configuration file to start the switch. If a failure occurs while copying a new image to the switch, and the old image has already been deleted, you will need to use the XMODEM protocol to recover an image for the switch. For more information, refer to the [“Recovering from Corrupted Software”](#) section in the [“Troubleshooting”](#) chapter of the *Catalyst 2950 Desktop Switch Software Configuration Guide*.
- Using CMS or the CLI to upgrade the software on your switch or switch cluster:
  - If you are using Cluster Manager to upgrade a switch, follow the steps in the [“Using Cluster Manager to Upgrade One or More Switches”](#) section on page 29.
  - If you are using the CLI to upgrade a switch, follow the steps in the [“Using the CLI to Upgrade a Catalyst 2950 Switch”](#) section on page 30 or the [“Using the CLI to Upgrade Member Switches”](#) section on page 32.

When you upgrade a switch, the switch continues to operate while the new software is copied to Flash memory. If Flash memory has enough space, the new image is copied to the selected switch but does not replace the running image until you reboot the switch. If a failure occurs during the copy process, you can still reboot your switch by using the old image. If Flash memory does not have enough space for two images, the new image is copied over the existing one. Features provided by the new software are not available until you reload the switch.



### Note

After you upgrade your switch to Cisco IOS Release 12.1(6)EA2, the **tar** command is replaced by the **archive tar** command.

## Determining the Software Version

The IOS image is stored as a *.bin* file in a directory that is named with the IOS release. A subdirectory contains the HTML files needed for web management. The image is stored on the system board Flash device (flash:).

You can use the **show version** user EXEC command to see the software version that is running on your switch. In the output, check the line that begins with *System image file is*. It shows the directory name in Flash memory where the image is stored.

You can also use the **dir filesystem:** privileged EXEC command to see the directory names of other software images that you might have stored in Flash memory.

## Which Software Files to Download from Cisco.com

New software releases are posted on Cisco.com and are also available through authorized resellers.

Table 7 describes the file extensions and what they mean for the upgrade procedure. It is easier to upgrade the switch software by using a *.tar* file that contains the HTML files and the IOS image. The upgrade procedures in these release notes describe how to perform the upgrade by using a *.tar* file, and you must use a *.tar* file to upgrade a switch through the CMS.

Table 8 lists the software files for this IOS release.



### Note

We recommend that you download the *.tar* file that contains the IOS image file and the HTML files. The procedures in these release notes are for upgrading a switch by using the *.tar* file, and the Device Manager and Cluster Manager are designed to upgrade a switch by using this file.

**Table 7** Possible Extensions for IOS Software Files

Extension	Description
.tar	A compacted file from which you can extract files by using the <b>tar</b> command: <b>Note</b> The <i>.tar</i> file contains both the IOS image file and the HTML files.
.bin	The IOS image file that you can copy to the switch through TFTP.

**Table 8** Catalyst 2950 Cisco IOS Software Files

Filename	Description
c2950-i6q4l2-mz.121-6.EA2.bin	IOS image file
c2950-i6q4l2-mz.121-6.EA2.tar	IOS image file and HTML files

## Downloading the New Software and TFTP Server Application to Your Management Station

Follow these steps to download the new software and, if necessary, the TFTP server application, from Cisco.com to your management station:

- 
- Step 1** Use [Table 7](#) and [Table 8](#) to identify the files that you want to download.
- Step 2** Download the files from one of these locations:  
 If you have a SmartNet support contract, go to this URL, and download the appropriate files:  
<http://www.cisco.com/cgi-bin/tablebuild.pl/cat2950>  
 If you do not have a SmartNet contract, go to this URL, and download the appropriate files:  
<http://www.cisco.com/pcgi-bin/tablebuild.pl/cat2950>
- Step 3** Use the CLI or web-based interface to perform a TFTP transfer of the file or files to the switch after you have downloaded them to your PC or workstation.  
 The readme.txt file describes how to download the TFTP server application. New features provided by the software are not available until you reload the software.

## Copying the Current Startup Configuration from the Switch to a PC or Server

When you make changes to a switch configuration, your changes become part of the running configuration. When you enter the command to save those changes to the startup configuration, the switch copies the configuration to the config.text file in Flash memory. To ensure that you can recreate the configuration if a switch fails, you might want to copy the config.text file from the switch to a PC or server.

This procedure requires a configured TFTP server such as the Cisco TFTP server available on Cisco.com.

Beginning in privileged EXEC mode, follow these steps to copy a switch configuration file to the PC or server that has the TFTP server application:

- 
- Step 1** Copy the file in Flash memory to the root directory of the TFTP server:  
`switch# copy flash:config.text tftp`
- Step 2** Enter the IP address of the device where the TFTP server resides:  
 Address or name of remote host []? *ip\_address*
- Step 3** Enter the name of the destination file (for example, **config.text**):  
 Destination filename [config.text]? *yes/no*
- Step 4** Verify the copy by displaying the contents of the root directory on the PC or server.
-

## Using Cluster Manager to Upgrade One or More Switches

You can use the Software Upgrade feature of the Cluster Manager to upgrade all or some of the switches in a cluster at once. Consider these conditions when doing an upgrade:

- You cannot upgrade Catalyst 2950, Catalyst 2900 XL, and Catalyst 3500 XL switches at the same time. However, you can group together and upgrade Catalyst 1900 and Catalyst 2820 switches at the same time.
- Upgrade Catalyst 1900 and Catalyst 2820 switches last. To function efficiently, these switches need to be rebooted shortly after the upgrade occurs. If you do not click **Reboot Cluster** in 30 seconds after the upgrade, the Catalyst 1900 and Catalyst 2820 switches automatically reboot.
- For Catalyst 2950, Catalyst 2900 XL, and Catalyst 3500 XL switches, enter the *image\_name.tar* filename in the New File Name field. The .tar file contains both the IOS image and the web-management code.
- For Catalyst 1900 and Catalyst 2820 switches, enter the *image\_name.bin* filename in the New File Name field. The .bin file contains the software image and the web-management code.

Follow these steps to use Cluster Manager to upgrade software. Refer to the online help for more details.

- 
- Step 1** In Cluster Manager, select **Administration > Software Upgrade** to display the Software Upgrade window.
- Step 2** Enter the .tar filename (for Catalyst 2950, Catalyst 2900 XL and Catalyst 3500 XL switches) or the .bin filename (for Catalyst 1900 and Catalyst 2820 switches) that contains the switch software image and the web-management code.

You can enter just the filename or a pathname into the **New Image File Name** field. You do not need to enter a pathname if the image file is in the directory that you have defined as the TFTP root directory.

---



**Note**

You can also use Device Manager to upgrade a single switch by following the same software upgrade procedure.

---



**Note**

Close your browser after the upgrade process is complete.

---

On Catalyst 3500 XL, Catalyst 2950, and Catalyst 2900 XL, switches, new images are copied to Flash memory and do not affect operation. The switch checks Flash memory to ensure that there is sufficient space before the upgrade takes place. If there is enough space, the new image is copied to the switch without replacing the old image, and after the new image is completely downloaded, the old one is erased. In this case, you can still reboot your switch by using the old image if a failure occurs during the copy process.

If there is not enough space in Flash memory for the new and old images, the old image is deleted, and the new image is downloaded.



**Note**

If a failure occurs while copying a new image to the switch, and the old image has already been deleted, you need to use the XMODEM protocol to recover an image for the switch. For more information, refer to the “Recovering from Corrupted Software” section in the “Troubleshooting” chapter of the *Catalyst 2950 Desktop Switch Software Configuration Guide*.

---

## Using the CLI to Upgrade a Catalyst 2950 Switch

This procedure is for upgrading Catalyst 2950 switches by copying the .tar file to the switch. You copy the files to the switch from a TFTP server and extract the files by entering the **tar** command, with these results:

- Changes the name of the current image file to the name of the new file that you are copying and replaces the old image file with the new one. Perform this step only if you have space available on your switch.
- Disables access to the HTML pages and deletes the existing HTML files before the software upgrade to avoid a conflict if users access the web pages during the software upgrade.
- Reenables access to the HTML pages after the upgrade is complete.

Follow these steps to upgrade the switch software by using a TFTP transfer:

---

**Step 1** If your PC or workstation cannot act as a TFTP server, copy the file to a TFTP server to which you have access.

**Step 2** Access the CLI by starting a Telnet session or by connecting to the switch console port through the RS-232 connector.

To start a Telnet session on your PC or workstation, enter this command:

```
server% telnet switch_ip_address
```

Enter the Telnet password if you are prompted to do so.

**Step 3** Enter privileged EXEC mode:

```
switch> enable
switch#
```

Enter the password if you are prompted to do so.

**Step 4** Display the name of the running (default) image file (BOOT path-list). This example shows the name in italic:

```
switch# show boot
BOOT path-list:    flash:current_image
Config file:      flash:config.text
Enable Break:     1
Manual Boot:      no
HELPER path-list:
NVRAM/Config file
buffer size: 32768
```

**Step 5** If there is no software image defined in the BOOT path-list, enter **dir flash:** to display the contents of Flash memory.

**Step 6** Using the exact, case-sensitive name of the .tar file that you downloaded, rename the running image file to that name, and replace the .tar extension with .bin. The image filename is then the same as the downloaded filename but with a .bin extension. This step does not affect the operation of the switch.




---

**Note** Perform this step only if you have space available on your switch and want to retain a copy of the old image.

---

```
switch# rename flash:current_image flash:new_image
Source filename [current_image]?
Destination filename [new_image]?
```

For example:

```
switch# rename flash:c2950-c3h2s-mz.120-5.WC2.bin flash: c2950-i6q412-mz.121-6.EA2.bin
```

**Step 7** Display the contents of Flash memory to verify the renaming of the file:

```
switch# dir flash:
```

```
Directory of flash:/
 3  drwx      10176   Mar 01 2001 00:04:34  html
 6  -rwx       2343   Mar 01 2001 03:18:16  config.text
171 -rwx     1667997   Mar 01 2001 00:02:39  c2950-i6q412-mz.121-6.EA2.bin
 7  -rwx       3060   Mar 01 2001 00:14:20  vlan.dat
172 -rwx         100   Mar 01 2001 00:02:54  env_vars

7741440 bytes total (4788224 bytes free)
```

**Step 8** Enter global configuration mode:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 9** Enter the **boot** command with the name of the new image filename:

```
switch(config)# boot system flash:new_image
```

For example:

```
switch(config)# boot system flash:c2950-i6q412-mz.121-6.EA2.bin
```



**Note**

If the **show boot** command entered in [Step 4](#) displays no image name, you do not need to enter this command; the switch automatically finds the correct file to use when it resets.

**Step 10** Return to privileged EXEC mode:

```
switch(config)# end
```

**Step 11** Remove the HTML files:

```
switch# delete flash:html/*
```

Press **Enter** to confirm the deletion of each file. Do not press any other keys during this process.



**Caution**

In this step, the **tar** command copies the .tar file that contains both the image and the HTML files.

**Step 12** Enter this command to copy the new image and HTML files to Flash memory:

```
switch# tar /x tftp://server_ip_address//path/filename.tar flash:
Loading /path/filename.tar from server_ip_address (via VLAN1):!
extracting info (110 bytes)
extracting c2950-i6q412-mz.121-6.EA2.bin (2239579 bytes)!!!!!!!!!!!!!!!!!!!!!!
html/ (directory)
extracting html/Detective.html.gz (1139 bytes)!
extracting html/ieGraph.html.gz (553 bytes)
extracting html/DrawGraph.html.gz (787 bytes)
extracting html/GraphFrame.html.gz (802 bytes)!
...
```

Depending on the TFTP server being used, you might need to enter only one slash (/) after the *server\_ip\_address* in the **tar** command.

**Step 13** Enter global configuration mode:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 14** Return to privileged EXEC mode:

```
switch(config)# end
```

**Step 15** Reload the new software with this command:

```
switch# reload
System configuration has been modified. Save? [yes/no]:y
Proceed with reload? [confirm]
```

**Step 16** Press **Return** to confirm the reload.

Your Telnet session ends when the switch resets.

After the switch reboots, use Telnet to return to the switch, and enter the **show version** user EXEC command to verify the upgrade procedure. If you have a previously opened browser session to the upgraded switch, close the browser, and start it again to ensure that you are using the latest HTML files.

---

## Using the CLI to Upgrade Member Switches

Because a member switch might not be assigned an IP address, command-line software upgrades through TFTP are managed through the command switch.

This section provides these procedures:

- [“Upgrading Catalyst 2950, Catalyst 2900 XL or Catalyst 3500 XL Member Switches” section on page 32](#)
- [“Upgrading Catalyst 1900 or Catalyst 2820 Member Switches” section on page 34](#)

### Upgrading Catalyst 2950, Catalyst 2900 XL or Catalyst 3500 XL Member Switches

Follow these steps to upgrade the software on a member switch:

---

**Step 1** In privileged EXEC mode on the command switch, display information about the cluster members:

```
switch# show cluster members
```

From the output, select the number of the member switch that you want to upgrade. The member number is in the SN column of the display. You need this member number for Step 2.

**Step 2** Log in to the member switch (for example, member number 1):

```
switch# rcommand 1
```

**Step 3** Enter privileged EXEC mode:

```
switch> enable
switch#
```

Enter the password if you are prompted to do so.

**Step 4** Display the name of the running (default) image file (BOOT path-list). This example shows the name in italic:

```
switch# show boot
BOOT path-list:   flash:current_image
Config file:      flash:config.text
Enable Break:     1
Manual Boot:      no
HELPER path-list:
NVRAM/Config file
buffer size: 32768
```

**Step 5** If there is no software image defined in the BOOT path-list, enter **dir flash:** to display the contents of Flash memory.

**Step 6** Using the exact, case-sensitive name of the .tar file that you downloaded, rename the running image file to that name, and replace the .tar extension with .bin. The image filename is then the same as the downloaded filename but with a .bin extension. This step does not affect the operation of the switch.



**Note** Perform this step only if you have space available on your switch and want to retain a copy of the old image.

```
switch# rename flash:current_image flash:new_image
Source filename [current_image]?
Destination filename [new_image]?
```

For example:

```
switch# rename flash:c2950-c3h2s-mz.120-5.WC2.bin flash: c2950-i6q412-mz.121-6.EA2.bin
```

**Step 7** Display the contents of Flash memory to verify the renaming of the file:

```
switch# dir flash:

Directory of flash:/
 3  drwx      10176  Mar 01 2001 00:04:34  html
 6  -rwx       2343  Mar 01 2001 03:18:16  config.text
171 -rwx      1667997  Mar 01 2001 00:02:39  c2950-i6q412-mz.121-6.EA2.bin
 7  -rwx       3060  Mar 01 2001 00:14:20  vlan.dat
172 -rwx        100  Mar 01 2001 00:02:54  env_vars

7741440 bytes total (4788224 bytes free)
```

**Step 8** Enter global configuration mode:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 9** Enter the **boot** command with the name of the new image filename:

```
switch(config)# boot system flash:new_image
```

For example:

```
switch(config)# boot system flash:c2950-i6q412-mz.121-6.EA2.bin
```



**Note**

If the **show boot** command entered in [Step 4](#) displays no image name, you do not need to enter this command; the switch automatically finds the correct file to use when it resets.

**Step 10** Return to privileged EXEC mode:

```
switch(config)# end
```

**Step 11** Remove the HTML files:

```
switch# delete flash:html/*
```

Press **Enter** to confirm the deletion of each file. Do not press any other keys during this process.



**Caution**

In this step, the **tar** command copies the .tar file that contains both the image and the HTML files.

**Step 12** Start the TFTP copy function as if you were initiating it from the command switch.

```
switch-1# tar /x tftp://server_ip_address//path/filename.tar flash:
Source IP address or hostname [server_ip_address]?
Source filename [path/filename]?
Destination filename [flash:new_image]?
Loading /path/filename.bin from server_ip_address (via!)
[OK - 843975 bytes]
```

**Step 13** Enter global configuration mode:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

**Step 14** Return to privileged EXEC mode:

```
switch(config)# end
```

**Step 15** Reload the new software with this command:

```
switch-1# reload
System configuration has been modified. Save? [yes/no]:y
Proceed with reload? [confirm]
```

Press **Enter** to start the download.

You lose contact with the switch while it reloads the software. For more information on the **rcommand** command, refer to the *Catalyst 2950 Desktop Switch Command Reference*.

## Upgrading Catalyst 1900 or Catalyst 2820 Member Switches

Follow these steps to upgrade the software on a Catalyst 1900 or Catalyst 2820 member switch:

**Step 1** In privileged EXEC mode on the command switch, display information about the cluster members:

```
switch# show cluster members
```

From the display, select the number of the member switch that you want to upgrade. The member number is in the SN column of the display. You need this member number for Step 2.

**Step 2** Log in to the member switch (for example, member number 1):

```
switch# rcommand 1
```

**Step 3** For switches running standard edition software, enter the password (if prompted), access the Firmware Configuration menu from the menu console, and perform the upgrade. Follow the instructions in the installation and configuration guide that shipped with your switch. When the download is complete, the switch resets and begins using the new software.

The Telnet session accesses the menu console (the menu-driven interface) if the command switch password is privilege level 15. If the command switch password is privilege level 1, you are prompted for the password.

You lose contact with the switch while it reloads the software.

**Step 4** For switches running Enterprise Edition Software, start the TFTP copy as if you were initiating it from the member switch:

```
switch-1# copy tftp://host/src_file opcode
```

For example, **copy tftp://spaniel/op.bin opcode** downloads new system operational code *op.bin* from the host *spaniel*.

You should see the `TFTP successfully downloaded operational code` message. When the download is complete, the switch resets and begins using the new software. If this message does not appear, refer to the installation and configuration guide that shipped with your switch for more information.

You can also upgrade the switch software through the Firmware Configuration menu from the menu console. For more information, refer to the installation and configuration guide that shipped with your switch.

You lose contact with the switch while it reloads the software.

## Related Documentation

These documents provide complete information about the switch and are available from this Cisco.com site:

<http://www.cisco.com/univercd/cc/td/doc/product/lan/cat2950/index.htm>

The software documents are not shipped with the product, but you can access them under the appropriate IOS software release on Cisco.com. You can order printed copies of documents with a DOC-xxxxxx= number from the Cisco.com sites and from the telephone numbers listed in the [“Ordering Documentation” section on page 36](#).

These publications provide more information about the switches:

- The *Catalyst 2950 Desktop Switch Software Configuration Guide* (order number DOC-7811380=)
- The *Catalyst 2950 Desktop Switch Command Reference* (order number DOC-7811381=)
- The *Catalyst 2950 Desktop Switch Hardware Installation Guide* (order number DOC-7811157=)
- *Catalyst GigaStack Gigabit Interface Converter Hardware Installation Guide* (DOC-786460=)
- Cluster Management Suite (CMS) online help

# Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

## World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

## Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

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- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:  
[http://www.cisco.com/cgi-bin/order/order\\_root.pl](http://www.cisco.com/cgi-bin/order/order_root.pl)
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### Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

<http://www.cisco.com>

### Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

## Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

## Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

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This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.



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