Release Notes for the Catalyst 2970 Switch Cisco IOS Release 12.1(14)EA1

July 2003

The Cisco IOS Release 12.1(14)AX runs on all Catalyst 2970 switches.

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

- If you are installing a new switch, refer to the Cisco IOS release label on the rear panel of your switch.
- If your switch is on, use the **show version** privileged EXEC command. See the "Determining the Software Version and Feature Set" section on page 4.
- If you are upgrading to a new release, refer to the software upgrade filename for the software version.

For the complete list of Catalyst 2970 switch documentation, see the "Related Documentation" section on page 24.

You can download the switch software from these sites:

- http://www.cisco.com/kobayashi/sw-center/sw-lan.shtml

  (for registered Cisco.com users with a login password)
- http://www.cisco.com/public/sw-center/sw-lan.shtml

  (for nonregistered Cisco.com users)

This software 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 software releases become available, they will be posted to Cisco.com (previously Cisco Connection Online [CCO]) in the Cisco IOS software area.

Note If you are upgrading a switch that uses the 802.1X feature, you must re-enable 802.1X after upgrading the software. For more information, see the "Cisco IOS Notes" section on page 17.

CISCO SYSTEMS

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

Contents

This information is in the release notes:

System Requirements

These are the system requirements for this software release:

Hardware Supported

Table 1 lists the hardware supported by this software release.

Table 1 Supported Hardware

Switch	Description
Catalyst 2970G-24T	24 10/100/1000 Ethernet ports
Redundant power systems	Cisco RPS 300 Redundant Power System
	Cisco RPS 675 Redundant Power System

Software Compatibility

For information about the recommended platforms for web-based management, operating systems and browser support, Java plug-in guidelines and installation procedures, refer to the *Catalyst 2970 Switch Hardware Installation Guide*.

Creating Clusters with Different Releases of Cisco IOS Software

This section describes how to choose command and standby command switches when a cluster consists of a mixture of Catalyst switches. The command switch must be the same type as the standby command switch. The Catalyst 2970 switch can be part of a cluster as a standalone switch.

If your cluster has Catalyst 2970, Catalyst 3550, Catalyst 2950, Catalyst 2900 XL, and Catalyst 3500 XL switches, the Catalyst 3550 switch (with the latest software release) should be the command switch.

Table 2 lists the cluster capabilities and software versions for the switches. The switches are listed in the order of highest to lowest end switch. A lower-end switch cannot be the command switch of a switch listed above it in the table (for example, a Catalyst 2950 switch cannot be the command switch of a cluster that has Catalyst 2970 or Catalyst 3550 switches).

Table 2 Switch Software and Cluster Capability

Switch	Cisco IOS Release	Cluster Capability
Catalyst 3750	12.1(11)AX	Member or command switch
Catalyst 3550	12.1(4)EA1 or later	Member or command switch
Catalyst 2970	12.1(11)AX	Member or command switch
Catalyst 2950	12.1(5.2)WC(1) or later	Member or command switch
Catalyst 2955	12.1(12c)EA1 or later	Member or command switch
Catalyst 3500 XL	12.0(5.1)XU or later	Member or command switch
Catalyst 2950	12.0(5.2)WC(1) or later	Member or command switch
Catalyst 2900 XL (8-MB switches)	12.0(5.1)XU or later	Member or command switch
Catalyst 2900 XL (4-MB switches)	11.2(8.5)SA6 (recommended)	Member switch only[1]
Catalyst 1900 and 2820	9.00(-A or -EN) or later	Member switch only

1. Catalyst 2900 XL (4-MB) switches appear in the front-panel and topology views of the Cluster Management Suite (CMS). However, CMS does not support configuration or monitoring of these switches.

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 Cisco IOS software, software features added on the latest release might not be reflected on switches running the older versions. For example, if you start Cluster Management Suite (CMS) on a Catalyst 2900 XL switch running Cisco IOS Release 11.2(8)SA6, the windows and functionality can be different from a switch running Cisco IOS Release 12.0(5)WC(1) or later.

Note The CMS is not forward-compatible, which means that if a member switch is running a software version that is newer than the release running on the command switch, the new features are not available on the member switch. If the member switch is a new device supported by a software release that is later than the software release on the command switch, the command switch cannot recognize the member switch, and it is displayed 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 configure and to obtain reports for that member.

Downloading Software

These are the procedures for downloading software:

Note Before downloading software, read this section for important information.

Determining the Software Version and Feature Set

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

You can use the **show version** privileged EXEC command to see the software version that is running on your switch. The second line displays C2970-I6L2-M.

Determining Which Files to Use

The upgrade procedures in these release notes describe how to perform the upgrade by using a combined .tar file. This file contains both the Cisco IOS image file and the files needed for the CMS. You must use the combined .tar file to upgrade the switch through the CMS. To upgrade the switch through the CLI, use the .tar file and the **archive download-sw** privileged EXEC command.

Table 3 lists the software filenames for this software release.

Table 3 Cisco IOS Software Image Files for Catalyst 2970 Switches

Filename	Description
c2970-i612-tar.121-14.EA1.tar	Cisco IOS image file and CMS files, which provide enterprise-class intelligent services such as access control lists (ACLs) and quality of service (QoS).
c2970-i6k212-tar.121-14.EA1.tar	Cisco IOS crypto image file and CMS files. This image has the Kerberos and SSH features.

Upgrading a Switch by Using CMS

You can upgrade switch software by using CMS. From the menu bar, select **Administration > Software Upgrade**. For detailed instructions, click **Help**.

Upgrading a Switch by Using the CLI

This procedure is for copying the combined .tar file to the Catalyst 2970 switch. You copy the file to the switch from a TFTP server and extract the files. You can download an image file and replace or keep the current image.

To download software, and if necessary, the TFTP server application, follow these steps:

Step 1 Use Table 3 on page 4 to identify the file that you want to download.

Step 2 Download the software image file.

- If you have a SmartNet support contract, go to this URL and log in to download the appropriate files:

  http://www.cisco.com/kobayashi/sw-center/sw-lan.shtml

- If you do not have a SmartNet contract, go to this URL and follow the instructions to register on Cisco.com and download the appropriate files:

  http://www.cisco.com/public/sw-center/sw-lan.shtml

To download the image, select **Catalyst 2970 software**.

To obtain authorization and to download the crypto software files, select **Catalyst 2970 3DES Cryptographic Software**.

Step 3 Copy the image to the appropriate TFTP directory on the workstation, and make sure that the TFTP server is properly configured.

For more information, refer to Appendix B in the software configuration guide for this release.

Step 4 Log in to the switch through the console port or a Telnet session.

Step 5 Ensure that you have IP connectivity to the TFTP server by using this privileged EXEC command:

```
Switch# ping tftp-server-address
```

For more information about assigning an IP address and default gateway to the switch, refer to the software configuration guide for this release.

Step 6 Download the image file from the TFTP server to the switch. If you are installing the same version of software that is currently on the switch, overwrite the current image by using this privileged EXEC command:

```
archive download-sw /overwrite /reload tftp:[[//location]/directory]/image-name.tar
```

The **/overwrite** option overwrites the software image in Flash memory with the downloaded one.

The **/reload** option reloads the system after downloading the image unless the configuration has been changed and not been saved.

For **//***location*, specify the IP address of the TFTP server.

For */directory*/*image-name*.**tar**, specify the directory (optional) and the image to download. Directory and image names are case sensitive.

This example shows how to download an image from a TFTP server at 198.30.20.19 and to overwrite the image on the switch:

```
Switch# archive download-sw /overwrite tftp://198.30.20.19/c2970-i612-tar.121-14.EA1.tar
```

You can also download the image file from the TFTP server to the switch and keep the current image by replacing the **/overwrite** option with the **/leave-old-sw** option.

Recovering from a Software Failure

Switch software can be corrupted during an upgrade, by downloading the wrong file to the switch, and by deleting the image file. In all of these cases, the switch does not pass the power-on self-test (POST), and there is no connectivity. You can use the XMODEM protocol to recover from this failure.

For detailed recovery procedures, refer to the "Troubleshooting" chapter in the software configuration guide for this release.

Installation Notes

You can assign IP information to your switch by using these methods:

- The Express Setup program (See the procedure that follows).
- The setup program (Refer to the *Catalyst 2970 Switch Hardware Installation Guide*.)
- The Dynamic Host Configuration Protocol (DHCP)-based autoconfiguration (Refer to the *Catalyst 2970 Switch Software Configuration Guide*.)
- Manually assigning an IP address (Refer to the *Catalyst 2970 Switch Software Configuration Guide*.)

Note If you are upgrading a switch that uses the 802.1X feature, you must re-enable 802.1X after upgrading the software. For more information, see the "Cisco IOS Notes" section on page 17.

Using Express Setup to Configure a Switch

Express Setup is a browser-based program that you can use to set up and configure the switch. You assign the IP information so that the switch can connect to local routers and the Internet. The IP address is also required if you plan to further configure the switch.

You do not create a username with Express Setup. Express Setup provides the minimum configuration to configure a switch. To create a username for the switch, use the Cluster Management Suite (CMS) or the command-line interface (CLI).

Note To use Express Setup, you must have Cisco IOS Release 12.1(14)EA1 or later running on your switch.

This section provides a quick step-by-step setup procedure for a standalone switch and includes these steps:

Caution Do not start Express Setup when there are any devices connected to the switch or connect a switch that is already in Express Setup mode to any device other than the PC or workstation that is being used to configure it. The switch acts as a DHCP server during the Express Setup procedure, and only the PC or workstation connected to the switch after Express Startup is started should receive a DHCP address from the switch.

Before using Express Setup to configure a switch, refer to the switch hardware installation guide for this information:

- Removing the switch and AC power cord from the shipping container
- Getting an Ethernet (Category 5) straight-through cable to connect the switch to your PC or workstation
- Powering on the switch

Note The illustrations in this section show the Catalyst 2940 switch, but the Mode button, LEDs, and switch ports are similar on your switch.

Starting Express Setup

Before starting Express Setup, verify that the switch has passed the power-on self-test (POST). The SYST and STAT LEDs are green if the switch has passed POST. For information about troubleshooting a POST failure, refer to the switch hardware installation guide. You cannot start Express Setup until POST has completed.

Follow these steps to start the Express Setup program:

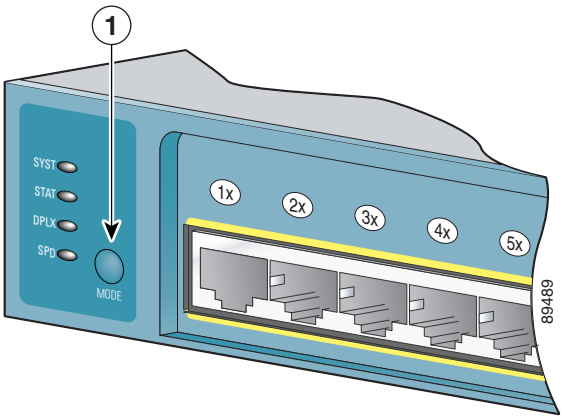
Step 1 Verify that no devices are connected to the switch.

Step 2 Press and hold the Mode button, as shown in Figure 1, until the four LEDs next to the Mode button turn green. This takes approximately 2 seconds.

Note If all of the Mode LEDs begin to blink after you have held the Mode button for 2 seconds, a configuration already exists on the switch, and the switch cannot go into Express Setup mode. Release the button. For more information, see the "Clearing the Switch IP Address and Configuration" section on page 12.

Caution If you continue to hold the button for 8 more seconds, the switch configuration is deleted, and the switch reloads.

Figure 1 Starting Express Setup



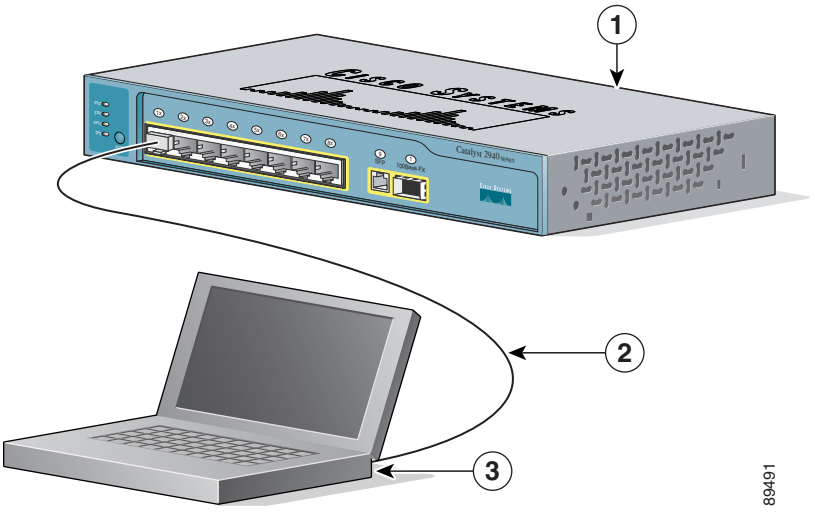
1	Mode button

Step 3 When the LEDs turn green, release the Mode button.

Step 4 Connect the Ethernet cable (not included) to a 10/100 Ethernet port on the front panel of the switch, as shown in Figure 2.

Caution Do not connect the switch to any device other than the PC or workstation being used to configure it.

Figure 2 Connecting the Switch and PC or Workstation Ethernet Ports



1	Switch	**3**	PC or workstation
2	Ethernet cable		

Step 5 Connect the other end of the cable to the Ethernet port on the PC or workstation.

Verify that the port status LED on the switch Ethernet port is green.

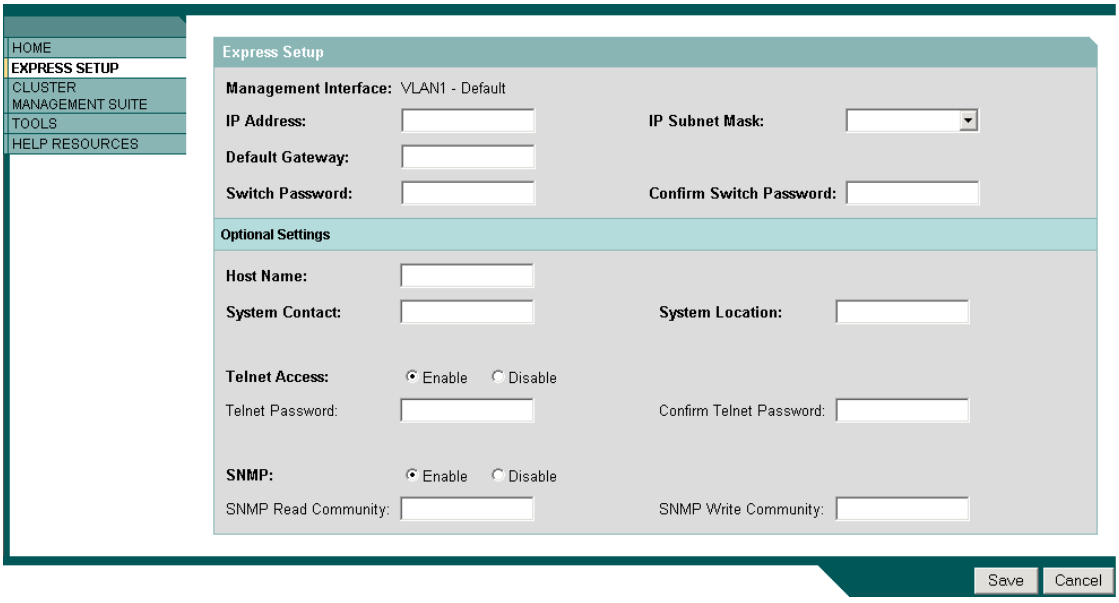
Step 6 Wait approximately 30 seconds *after* the port LED turns green, and launch a web browser on your PC or workstation.

Step 7 Enter the IP address **10.0.0.1** in the browser, as shown in Figure 3, and press **Enter**.

Figure 3 Entering the IP Address

The Express Setup home page appears, as shown in Figure 4.

Figure 4 Express Setup Home Page



If the Express Setup does not run, or the Express Setup home page does not appear in your browser:

- Did you wait 30 seconds after connecting the switch and PC or workstation before entering the IP address in your browser?

  If not, wait 30 seconds and re-enter **10.0.0.1** and press **Enter.**

- Did you enter the wrong address in your web browser, or is there an error message displayed in the browser window?

  Re-enter **10.0.0.1** and press **Enter**.

- Did you connect a crossover instead of a straight-through Ethernet cable between an Ethernet port of the switch and the Ethernet port of the PC or workstation, as shown Figure 2?

  If not, reconnect the cable to the Ethernet port on the switch and PC or workstation. Wait 30 seconds before entering **10.0.0.1** in the browser.

- Did you verify that POST successfully ran before starting Express Setup?

If not, make sure that only the SYST and STAT LEDs are green before pressing the Mode button to begin Express Setup.

Note The rest of this section explains how to configure a switch by using the Express Setup web page. To configure the switch by using the CLI-based setup program, refer to the switch hardware installation guide.

Configuring the Switch Settings

The Management Interface field displays *VLAN1-Default*. This is the management interface through which you manage the switch and to which you assign IP information.

Follow these steps to configure your switch with Express Setup:

Step 1 Contact your system administrator and obtain the IP address, the IP subnet mask, and the default gateway for your switch.

Step 2 Enter the IP address of the switch in the **IP Address** field.

Step 3 Click the drop-down arrow in the **IP Subnet Mask** field, and select an **IP Subnet Mask**.

Step 4 Enter the IP address for the default gateway in the **Default Gateway** field.

A gateway (router or dedicated network device) is a system that connects a network on one subnet to one or more networks on a different subnet.

Note You must specify a default gateway if the management workstation and the switch are on different IP segments.

Step 5 Enter your password in the **Switch Password** field.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows embedded spaces, but does not allow embedded spaces at the beginning or end.

Step 6 Enter your password again in the **Confirm Switch Password** field.

You do not enter a username for the switch. After the switch is configured with an IP address, you can use CMS to configure a username.

Step 7 (Optional) Enter a host name for the switch in the **Host Name** field. The host name is limited to 31 characters; embedded spaces are not allowed.

Step 8 (Optional) Enter the name of your system contact in the **System Contact** field. This identifies the system administrator for the switch or network.

Step 9 (Optional) Enter your system location in the **System Location** field. This identifies the physical location of the switch.

Step 10 (Optional) Click **Enable** in the **Telnet Access** field if you are going to use Telnet to manage the switch by using the CLI. If you enable Telnet access, you must enter a Telnet password:

a. Enter a password in the **Telnet Password** field. The Telnet password can be from 1 to 25 alphanumeric characters, is case sensitive, allows embedded spaces, but does not allow embedded spaces at the beginning or end.

b. Enter the Telnet password again in the **Confirm Telnet Password** field.

Step 11 (Optional) Click **Enable** to configure Simple Network Management Protocol (SNMP). Enable SNMP only if you plan to manage switches by using Cisco Works or another SNMP-based network-management system.

If you enable SNMP, you must enter a community string in either the **SNMP Read Community** field, the **SNMP Write Community** field, or both. SNMP community strings authenticate access to MIB objects. Embedded spaces are not allowed in SNMP community strings. If you set the SNMP read community, users can access MIB objects, but cannot modify them. If you set the SNMP write community, users can access and modify MIB objects.

Step 12 Click **Save** to save your settings to the switch, or click **Cancel** to clear your settings.

After you save your settings, the switch exits Express Setup mode. Your switch is now configured with the new IP address. You can install the switch in your production network.

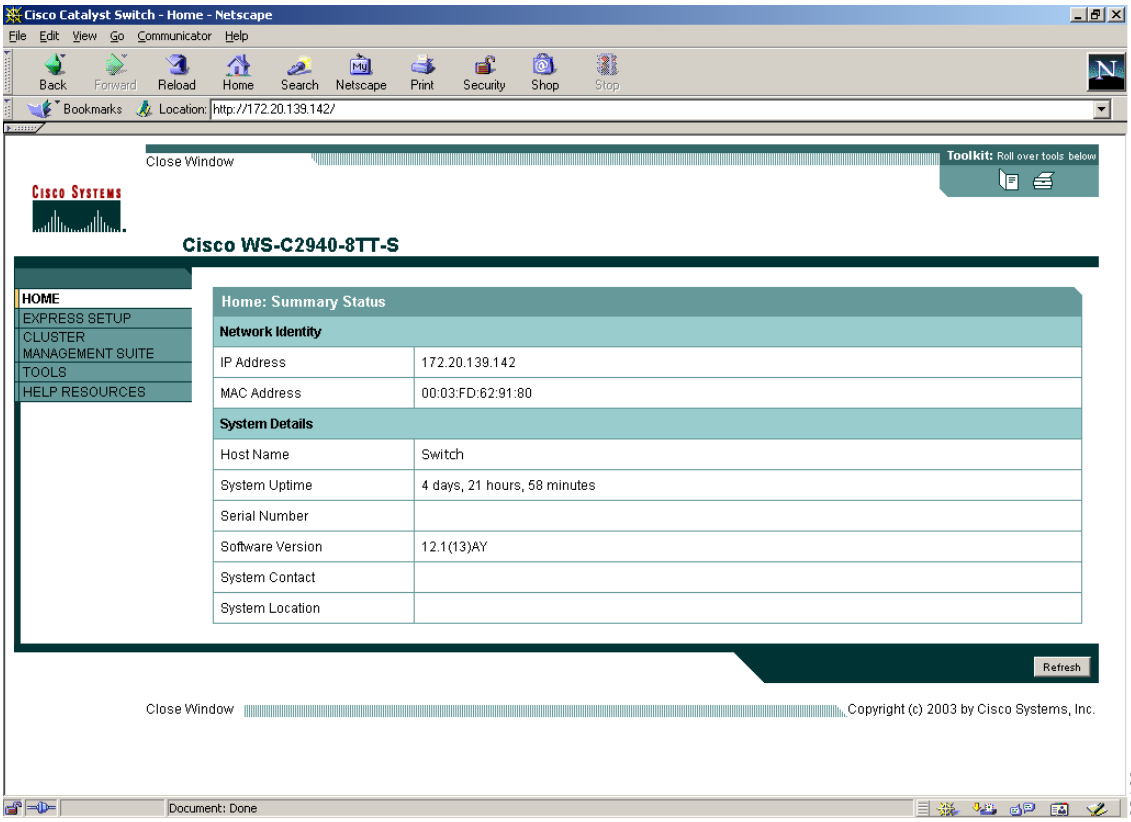
Verifying Switch IP Address (Optional)

After you have installed the switch in your network, follow these steps to verify the IP address configured on your switch:

Step 1 Launch a web browser on a PC or workstation that is connected the network.

Step 2 Enter the IP address of your switch (for example: **172.20.139.142**.) The switch home page appears, as shown in Figure 5.

Figure 5 Switch Home Page



Re-Running Express Setup

If you did not click Save at the end of the "Configuring the Switch Settings" section on page 10 section, you can re-run Express Setup by clicking **Express Setup** on the Switch home page.

If you have entered a wrong IP address or need to change the IP address of your switch, you can clear the IP address on your switch by following the steps in the "Clearing the Switch IP Address and Configuration" section on page 12.

Clearing the Switch IP Address and Configuration

If you have configured a new switch with a wrong IP address, or all the switch LEDs start blinking when you are trying to enter Express Setup mode, you can clear the IP address that is configured on the switch.

Note This procedure clears the IP address and all configuration information stored on the switch. Do not follow this procedure unless you want to completely reconfigure the switch.

To clear the IP address and the switch configuration information, follow these steps:

Step 1 Press and hold the Mode button, as shown in Figure 1 on page 8.

The switch LEDs begin blinking after about 2 seconds.

Step 2 Continue holding down the Mode button. The LEDs stop blinking after 8 additional seconds, and then the switch reboots.

Note These steps only work on a previously configured switch.

Where to Go Next

After you have saved your configuration to the switch, you can install the switch (refer to the switch hardware installation guide) or further configure it (refer to the switch software configuration guide).

New Features

These are the new supported hardware and the new software features provided this release:

- "New Hardware Features" section on page 13
- "New Software Features" section on page 13

New Hardware Features

For a list of all supported hardware, see the "Hardware Supported" section on page 2.

New Software Features

Cisco IOS release 12.1(14)EA1 contains these new features or enhancements:

- Express Setup for quickly configuring a switch for the first time with basic IP information, contact information, switch and Telnet passwords, and SNMP information through a browser-based program. For more information, see Using Express Setup to Configure a Switch, page 6.
- IEEE 802.1S Multiple Spanning Tree Protocol (MSTP) for grouping VLANs into a spanning-tree instance and for providing multiple forwarding paths for data traffic
- Rapid per-VLAN Spanning-Tree plus (Rapid-PVST+) based on IEEE 802.1W Rapid Spanning Tree Protocol (RSPT) for rapid convergence of the spanning tree upon network failure and topology changes
- Trusted boundary to detect the presence of a Cisco IP phone, to trust the class of service (CoS) value received, and to ensure port security
- Automatic quality of service (QoS) to simplify the deployment of existing QoS features by classifying traffic and configuring ingress and egress queues (voice over IP only)

- Link Aggregation Control Protocol (LACP) to facilitate the automatic creation of EtherChannels by exchanging packets between Ethernet interfaces. LACP is defined in IEEE 802.3AD.
- Support for these new security features:
  - 802.1X with per-user access control lists for providing different levels of network access and service to an 802.1X-authenticated user
  - 802.1X with VLAN assignment for restricting 802.1X-authenticated users to a specified VLAN
  - 802.1X with port security for controlling access to 802.1X ports
  - 802.1X with voice VLAN to detect the presence of a Cisco IP phone and permit the IP phone access to voice VLAN irrespective of the authorized or unauthorized state of the port
  - 802.1X with guest VLAN to provide limited services to clients that might not be 802.1X-compliant
- SPAN and RSPAN support of Intrusion Detection Systems (IDS) to monitor, repel, and report network security violations
- VLAN1 minimization for reducing the risk of spanning-tree loops or storms by allowing VLAN1 to be disabled on any individual VLAN trunk link. With this feature enabled, no user traffic is sent or received on the trunk. The switch CPU continues to send and receive control protocol frames.
- Port security enhancements, including support for CISCO-PORT-SECURITY-MIB, trunk ports and sticky MAC addresses, and the maximum number of secure MAC addresses specified in the SDM template
- Automatic media-dependent interface crossover (Auto MDIX) capability on 10/100 and 10/100/1000 Mbps interfaces that enables the interface to automatically detect the required cable connection type (straight through or crossover) and configure the connection appropriately
- Support for standard and extended IP access control lists (ACLs) and extended MAC ACLs in the inbound direction on Layer 2 interfaces (port ACLs).
- In-band management access through SNMPv3. SNMP version 3 AuthPriv mode requires the cryptographic (encrypted) version of the switch software image SMI and EMI.
- In-band management access for up to five simultaneous, encrypted Secure Shell (SSH) connections for multiple CLI-based sessions over the network (requires the cryptographic [that is, supports encryption] version of the switch software image)
- Kerberos security system to authenticate requests for network resources by using a trusted third party (requires the cryptographic [that is, supports encryption] version of the switch software image)
- Layer 2 traceroute to identify the physical path that a packet takes from a source device to a destination device
- Support for CISCO-ENTITY-FRU-CONTROL-MIB, CISCO-ENVMON-MIB, CISCO-FTP-CLIENT-MIB, CISCO-SYSLOG-MIB, and RFC1253-MIB

For a detailed list of key features for this software release, refer to the *Catalyst 2970 Switch Software Configuration Guide*.

Limitations and Restrictions

You should review this section before you begin working with the switch. These are known limitations that will not be fixed, and there is not always a workaround. Some features might not work as documented, and some features could be affected by recent changes to the switch hardware or software.

These are the limitations and restrictions:

Cisco IOS Limitations and Restrictions

These limitations apply to Cisco IOS configuration:

- If the number of Internet Group Management Protocol (IGMP) groups are more than the maximum number specified with the **show sdm prefer** global configuration command, the traffic received on unknown groups is flooded in the received VLAN. The workaround is to reduce the number of IGMP snooping groups to less than the maximum supported value. (CSCdy09008)
- IGMP filtering is applied to packets that are forwarded through hardware. It is not applied to packets that are forwarded through software. Hence, the first few packets are sent from a port even when IGMP filtering is set to deny those groups on that port. There is no workaround. (CSCdy82818)
- A static IP address might be removed when the previously acquired Dynamic Host Configuration Protocol (DHCP) IP address lease expires.

  This problem occurs under these conditions:

  - When the switch is booted without a configuration (no config.text file in Flash memory).
  - When the switch is connected to a DHCP server that is configured to give an address to it (the dynamic IP address is assigned to VLAN 1).
  - When an IP address is configured on VLAN 1 before the dynamic address lease assigned to VLAN 1 expires.

  The workaround is to reconfigure the static IP address. (CSCdz11708)
- The Catalyst 2970 switch treats frames received with mixed encapsulation (802.1Q and Inter-Switch Link [ISL]) as frames with FCS errors, increments the error counters, and causes the LED to blink amber. This happens when an ISL-unaware device receives an ISL-encapsulated packet and forwards the frame to an 802.1Q trunk interface. There is no workaround. (CSCdz33708)
- IP-option software-forwarded traffic is sometimes leaked unnecessarily on a trunk port. Suppose the trunk port in question is member of an IP multicast group in VLAN X, but it is not a member in VLAN Y. In VLAN Y, there is another port that has membership to the group, and VLAN Y is the output interface for the multicast route entry corresponding to the group. IP options traffic received on an input interface VLAN (other than VLAN Y) is unnecessarily sent on the trunk port in VLAN Y because the trunk port is forwarding in VLAN Y (even though the port has no group membership in VLAN Y). There is no workaround. (CSCdz42909)
- SNAP-encapsulated IP packets are dropped without an error message being reported at the interface. The switch does not support SNAP-encapsulated IP packets. There is no workaround. (CSCdz89142)
- During periods of very high traffic, when two RSPAN source sessions are configured, the VLAN ID of packets in one RSPAN session might overwrite the VLAN ID of the other RSPAN session. If this occurs, packets intended for one RSPAN VLAN are incorrectly sent to the other RSPAN VLAN. This problem does not affect RSPAN destination sessions. The workaround is to configure only one RSPAN source session. (CSCea72326)

- A Gigabit Ethernet connection between a SGMII (Serial Gigabit Media Independent Interface) port (3/4, 7/8, 11/12, 15/16, 19/20, and 23/24) and an Intel Pro/1000T Server Adapter NIC might loose connectivity. The link activates correctly, but might subsequently stop exchanging data. This is an Intel product defect. The workaround is to use RGMII (Reduced Gigabit Media Independent Interface) ports (1/2, 5/6, 9/10, 13/14, 17/18, and 21/22) instead of SGMII ports. Alternatively, use the **speed 1000** interface configuration command to force the speed of the port to 1000. (CSCea77032)

Cluster Limitations and Restrictions

These limitations apply to cluster configuration:

- When there is a transition from the cluster active command switch to the standby command switch, Catalyst 1900, Catalyst 2820, and Catalyst 2900 4-MB switches that are cluster members might lose their cluster configuration. You must manually add these switches back to the cluster. (CSCds32517, CSCds44529, CSCds55711, CSCds55787, CSCdt70872)
- When a Catalyst 2900 XL or Catalyst 3500 XL cluster command switch is connected to a Catalyst 3550 or to a Catalyst 3750 switch, the command switch does not find any cluster candidates beyond the Catalyst 3550 or the Catalyst 3750 switch if it is not a member of the cluster. You must add the Catalyst 3550 or the Catalyst 3750 switch to the cluster. You can then see any cluster candidates connected to it. (CSCdt09918)
- If both the active command-switch and the standby command switch fail at the same time, the cluster is not automatically recreated. Even if there is a third passive command switch, it might not recreate all cluster members because it might not have all the latest cluster configuration information. You must manually recreate the cluster if both the active and standby command switches simultaneously fail. (CSCdt43501)

CMS Limitations and Restrictions

These limitations apply to CMS configuration:

- Host names and Domain Name System (DNS) server names that contain commas on a cluster command switch, member switch, or candidate switch can cause CMS to behave unexpectedly. You can avoid this instability in the interface by not using commas in host names or DNS names. Do not enter commas when entering multiple DNS names in the IP Configuration tab of the IP Management window in CMS.
- Access control entries (ACEs) that contain the **host** keyword precede all other ACEs in standard access control lists (ACLs). You can reposition the ACEs in a standard ACL with one restriction: No ACE with the **any** keyword or a wildcard mask can precede an ACE with the **host** keyword.
- CMS performance degrades if the Topology View is open for several hours on a Solaris machine. The cause might be a memory leak. The workaround is to close the browser, reopen it, and launch CMS again. (CSCds29230)
- If you are printing a Topology View or Front Panel View that contains many devices and are running Solaris 2.6 with JDK1.2.2, you might get an *Out of Memory* error message. The workaround is to close the browser, re-open it, and launch CMS again. Before you perform any other task, bring up the view that you want to print, and click **Print** in the **CMS** menu.(CSCds80920)
- If a PC running CMS has low memory and CMS is running continuously for 2 to 3 days, the PC runs out of memory. The workaround is to relaunch CMS. (CSCdv88724)

- When a VLAN or a range of VLANs is already configured and you specify a VLAN filter for a SPAN session, the current configuration for that session is overwritten with the new entry. Although the CLI appends new entries after the existing ones, CMS recreates the whole session, overwrites the current entry, and provides only a single VLAN filter per entry. The workaround is to use the CLI. It is the only method for specifying multiple VLANs for filtering in a SPAN session. (CSCdw93904)
- CMS temporarily halts while starting with Netscape version 4.75 and Java Runtime Environment (JRE) 1.3.1 or 1.4.0 on Windows 98. This also happens with Netscape version 6.2 and JRE 1.3.1 on Windows 98. When you bring up CMS, it halts while determining network information. The workaround is to click once outside of the CMS window. Then CMS should proceed. (CSCdz69724)
- When you add a new member with a username and password that is different from the existing cluster members username and password, CMS produces an exception error because of an authentication failure. The workaround is to add the new member without any username and password. When the new member is added to the cluster, remove the existing username and password from the Username and Password fields, enter a new username and password, and then apply it to all cluster members. (CSCdz07957)
- When the Link Graphs application has run for hours displaying packet drop and error information, sometimes the X-axis crosses the Y-axis at a negative y value instead of at y = 0. This condition occurs with all supported operating systems, browsers, and Java plug-ins. There is no workaround. (CSCdz32584)

Important Notes

These are the important notes related to this software release:

- "Cisco IOS Notes" section on page 17
- "Cluster Notes" section on page 18
- "CMS Notes" section on page 18

Cisco IOS Notes

These notes apply to Cisco IOS configuration:

- The 802.1X feature in Cisco IOS Release 12.1(14)EA1 is not fully backward-compatible with the same feature in Cisco IOS Release 12.1(11)AX. If you are upgrading a switch running Cisco IOS Release 12.1(11)AX that has 802.1X configured, you must re-enable 801.1X after the upgrade by using the **dot1x system-auth-control** global configuration command. This global command does not exist in Cisco IOS Release 12.1(11)AX. Failure to re-enable 801.1X weakens security because some hosts can then access the network without authentication.
- The Catalyst 2970 switch does not support switch stacking. However, the **show processes** privileged EXEC command still lists stack related processes. This occurs because the Catalyst 2970 shares common code with other switches that do support stacking.

Cluster Notes

There are no cluster configuration notes to report.

CMS Notes

These notes apply to CMS configuration:

- If you use CMS on Windows 2000, it might not apply configuration changes if you change the enable password from the CLI during your CMS session. You have to restart CMS and enter the new password when prompted. Platforms other than Windows 2000 prompt you for the new enable password when it is changed.
- CMS does not display QoS classes that are created through the CLI if these classes have multiple match statements. When using CMS, you cannot create classes that match more than one match statement. CMS does not display policies that have such classes.
- If you use Internet Explorer Version 5.5 and select a URL with a nonstandard port at the end of the address (for example, *www.add.com*:84), you must enter *http://* as the URL prefix. Otherwise, you cannot launch CMS.
- Within an ACL, you can change the sequence of ACEs that have the **host** keyword. However, because such ACEs are independent of each other, the change has no effect on the way the ACL filters traffic.
- If you use the Netscape browser to view the CMS GUI and you resize the browser window while CMS is initializing, CMS does not resize to fit the window.

  Resize the browser window again when CMS is not busy.
- CMS does not start if the temporary directory on your computer runs out of memory. This problem can occur because of a bug in the 1.2.2 version of the Java plug-in. The plug-in creates temporary files in the directory whenever it runs CMS, and the directory eventually runs out of plug-in space.

  The workaround is to remove all the jar_cache*.tmp files from the temporary directory. The path to the directory is different for different operating systems:

  Solaris: /var/tmp
  Windows NT and Windows 2000: \TEMP
  Windows 95 and 98: \Windows\Temp
- In the Front Panel view or the Topology view, CMS does not display error messages in read-only mode for these switches:
  - 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

  In the Front Panel view, if the switch is running one of the previously listed software releases, the device LEDs do not appear. In the Topology view, if the member is a Long-Reach Ethernet (LRE) switch, the customer premises equipment (CPE) connected to the switch does 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 "Downloading Software" section on page 4.

Open Caveats

These are the open caveats with possible unexpected activity in this software release:

- "Open Cisco IOS Caveats" section on page 19
- "Open CMS Caveats" section on page 20

Open Cisco IOS Caveats

These are the severity 3 Cisco IOS configuration caveats:

- CSCdz30046

  When multicast VLAN registration (MVR) groups are added or deleted, the receiver port that joined the groups after the addition still receives traffic even after the group is deleted. The correct behavior is that MVR data traffic to the group should stop flowing to the receiver port immediately after the **no mvr group** *ip-address* global configuration command is entered.

  The workaround is to disable MVR by using the **no mvr** global configuration command and then to re-enable it by using the **mvr** command. Add and delete the groups that have problems by using the **mvr group** *ip-address* and the **no mvr group** *ip-address* global configuration commands.

- CSCea75390

  When two RSPAN sessions are active at the same time, packets might swap VLAN IDs during periods of very high traffic. Packets with swapped VLAN IDs can be egress spanned on VLAN 1.

  There is no workaround.

- CSCeb35422

  On a voice VLAN port with both 802.1X and port security enabled, dynamic secure addresses might not get deleted when the port is changed from multihost mode to single-host mode. This means that addresses learned in the multihost mode are still allowed after changing to single-host mode. This problem occurs under the following conditions:

  - The port is in authorized state
  - The port learns the MAC address of multiple hosts
  - VLAN assignment is not enabled for the authorized host

  The workaround is to disable and then re-enable port security on the port.

- CSCeb42949

  A Catalyst 2970 switch does not work with the User Registration Tool (URT). The PC attempting to connect to the network can log in successfully, but is not allowed to pass traffic after the port is moved to the user VLAN. The MAC address for that device shows BLOCKED.

  There is no workaround.

- CSCeb54159

  If an interface on a Catalyst 2970 switch is mapped to queue-set 2, and you disable and then re-enable multilayer QoS globally using the **mls qos** global configuration command, the interface is no longer mapped to the correct egress queue-set.

  The workaround is to reconfigure the interface queue-set by using the **no queue-set** interface configuration command followed by the **queue-set 2** interface configuration command.

Open CMS Caveats

These are the severity 3 CMS configuration caveats:

- CSCdz01037

  CMS fails when a switch is running the crypto software image and the vty lines have been configured to use only secure shell (SSH) using the **transport input ssh** and **line vty 0 15** global configuration commands.

  The workaround is to allow SSH and Telnet access through the vty lines by using the **transport input ssh telnet** and **line vty 0 15** global configuration command.

- CSCeb05183

  The Port Settings table displays meaningless information in the columns for interface description and duplex cells. This problem occurs for some of the Catalyst 2820 and Catalyst 1900 switches.

- CSCeb23334

  CMS does not validate configuration values for STP port priority before applying them to the switch. When invalid values are applied, the attempt fails silently without a warning message. This applies to all switches running Cisco IOS Release 12.1 or later.

  There is no workaround. Make sure input configuration values are valid.

- CSCeb23416

  CMS does not validate configuration values for STP port path cost before applying them to the switch. When invalid values are applied, the attempt fails silently without a warning message. This applies to all switches running Cisco IOS Release 12.1 or later.

  There is no workaround. Make sure input configuration values are valid for the switch type.

- CSCeb23592

  CMS does not validate configuration values for STP bridge parameters before applying them to the switch. When invalid values are applied, the attempt fails silently without a warning message. This applies to all switches running Cisco IOS 12.1 or later.

  There is no workaround. Make sure input configuration values are valid.

- CSCeb25630

  The Link Graphs bar chart for Packet Drops & Errors might display erroneous errors for Ethernet interfaces.

  The workaround is to use the **show interfaces** or **show interfaces counter** privileged EXEC commands command instead.

- CSCeb38514

  Sometimes a switch stack icon disappears from the topology view. This can occur if one of the switch stack members goes down or a switch stack member is disconnected from the stack.

  The workaround is to close the CMS browser and launch CMS again.

- CSCeb38967 LOTR and TRS

  When CMS is operating in read-only mode, an error is reported if help is launched from the QoS Graph dialog box.

  There is no workaround.

- CSCeb40625

  CMS does not apply shaped bandwidth weights that are invalid. Shaped weights are invalid if the sum of their reciprocals is greater than 1 and the weight of a queue is 0.

  There is no workaround.

Resolved Caveats

These are the caveats that have been resolved in this release.

- "Cisco IOS Caveats Resolved in Cisco IOS Release 12.1(14)EA1" section on page 21
- "Cisco CMS Caveats Resolved in Cisco IOS Release 12.1(14)EA1" section on page 23

Cisco IOS Caveats Resolved in Cisco IOS Release 12.1(14)EA1

These Cisco IOS caveats were resolved in Cisco IOS Release 12.1(14)EA1:

- CSCdz29910

  While in the interface-range configuration mode, if you use the **no channel-group** interface configuration command or change the channel-group mode by using the **channel-group** command, an assert-fail message with traceback information no longer appears.

- CSCdz69741

  If there is a lot of SNMP polling activity and MAC notification traps being sent on the switch, entering the **mac-address-table notification history-size** *value* global configuration command to change the MAC address notification table history size no longer causes the switch to fail.

- CSCea02137

  When an undefined aggregate policer is configured in a policy-map, the switch no longer generates the wrong aggregate policer for it.

- CSCea02355

  Cisco routers and switches running Cisco IOS software and configured to process Internet Protocol version 4 (IPv4) packets are vulnerable to a Denial of Service (DoS) attack. A rare sequence of crafted IPv4 packets sent directly to the device may cause the input interface to stop processing traffic once the input queue is full. No authentication is required to process the inbound packet. Processing of IPv4 packets is enabled by default. Devices running only IP version 6 (IPv6) are not affected. A workaround is available.

  Cisco has made software available, free of charge, to correct the problem.

  This advisory is available at

  http://www.cisco.com/warp/public/707/cisco-sa-20030717-blocked.shtml

- CSCea02851

  When you are in policy-map class configuration mode and configure an aggregate policer with the **police aggregate** policy-map class configuration command, causing the number of aggregate policers to exceed 63, the aggregate policer is no longer retained in the policy map.

- CSCea35481

  An extended access list with permit or forward actions using Layer 4 information no longer incorrectly forwards fragmented packets. All packets are correctly forwarded now.

- CSCea54285

  You can now set the VTP mode to transparent (3) by using SNMP.

- CSCea67031

  The switch no longer take several minutes to generate and optimize the forwarding rules after you configure a complex VLAN map. For example, a complex VLAN map might contain multiple sequences that use the same VLAN map ACL, where the individual ACL clauses include one or more deny clauses (nonterminating–not the last deny). During the optimization process, the switch now responds to commands.

- CSCea75726

  When snooping is disabled and a spanning tree loop exists, incoming IGMP report and leave messages no longer generate a storm of such messages in the network.

- CSCea86944

  Gigabit Ethernet ports configured for RGMII mode (1/2, 5/6, 9/10, 13/14, 17/18, and 21/22) no longer fail an internal loopback test during system startup.

- CSCea88723

  A routed port that uses an IP ACL no longer filters packets incorrectly after an administrative shutdown and restart. The problem previously occurred after the following sequence:

  - An IP ACL is applied to a routed port by using the **ip access-group** interface configuration command.
  - The routed port is shut down by using the **shutdown** interface configuration command.
  - The ACL is modified or another interface is changed between routed port and switched port by using the **switchport** and **no switchport** interface configuration commands.
  - The routed port is re-enabled by using the **no shutdown** interface configuration command.

- CSCeb01226

  Gigabit Ethernet ports no longer have FCS errors when operating at Gigabit speeds on the Catalyst 2970G-24T, Catalyst 3750G-24T, and Catalyst 3750G-24TS switches.

- CSCeb05555

  The RSPAN feature no longer incorrectly spans all local link control packets with a destination MAC address of 0100.0CCC.CCCC on trunk ports that carry the RSPAN VLAN. Therefore, trunk ports carrying the RSPAN VLAN no longer combine control packets from RSPAN source ports with normal local control packets. The following list describes problems that previously occurred with selected protocols:

  - Cisco Discovery Protocol (CDP) could provide incorrect information. For example, CDP could incorrectly list a neighbor switch that is actually a neighbor on the RSPAN source port.
  - Dynamic Trunking Protocol (DTP) could fail to work properly on trunks that are carrying the RSPAN VLAN.
  - Port Aggregration Protocol (PAgP) could fail to work properly on EtherChannels that are carrying the RSPAN VLAN.
  - VLAN Trunking Protocol (VTP) could incorrectly propagate VTP pruning messages on the wrong interface. For example, a pruning message intended for an RSPAN source port could also appear on the trunk port carrying the RSPAN VLAN.
  - Unidirectional Link Detection Protocol (UDLD) and any other protocol that uses 0100.00CC.CCCC as the destination MAC address could not operate properly on trunk ports that carry the RSPAN VLAN.

- CSCeb48939

  A switch configured for Rapid Spanning-tree (802.1w) no longer sends a Topology Change Notification (TCN) if an interface is reconfigured by using the **spanning-tree portfast** interface configuration command.

Cisco CMS Caveats Resolved in Cisco IOS Release 12.1(14)EA1

These CMS caveats were resolved in Cisco IOS Release 12.1(14)EA1:

- CSCdz52326

  In the Voice VLAN window, you can now configure a voice VLAN when the VLAN mode is set to dynamic desirable or dynamic auto.

- CSCea01123

  All Simple Network Management Protocol (SNMP) traps are now shown on the SNMP Trap Managers tab. For example, suppose you click the **Administration > SNMP > Trap Managers** tab, create a trap manager, click the vlancreate and vlandelete checkboxes along with other traps, and click **Apply**. When you select the new trap manager entry in the Current Managers list, the vlancreate and vlandelete options are now shown.

- CSCea12761

  In the Topology View, when you right-click a device in an expanded switch stack to display the Device Properties window, the model number of the stack master no longer shows in all switches.

- CSCea13508

  From the Users and Passwords window (**Administration > Users and Passwords**), there is now a provision for enabling or disabling the login for console or vty lines.

- CSCea15587

  Whenever a given VLAN has multiple router ports associated with it, the IGMP Router tab on the IGMP Report window (**Reports > Multicast > IGMP Report**) now shows all router ports on a given VLAN.

- CSCea16267

  When you select the **Device > QoS > Policies** window and try to modify a policy, you no longer receive a null-pointer exception error that prevents you from modifying the policy. The error previously occurred when the policy uses a class that has an ACL match statement and the ACL was deleted.

- CSCea26106

  You can now create or modify an EtherChannel when the ports in the EtherChannel do not meet the following requirements:

  - Port group members must belong to the same set of VLANs and must be all static-access or all trunk ports. The native VLAN ID, trunk VLANs, and pruning VLANs must be the same for trunk ports.
  - Port monitoring (also known as Switched Port Analyzer [SPAN]), port security, 802.1X should not be enabled on the port.
  - Dynamic-access ports cannot be grouped.

- CSCea80729

  The **Refresh** button of the CMS Inventory Report now updates the System Uptime.

Documentation Updates

These are corrections for the *Catalyst 2970 Switch Software Configuration Guide* and *Catalyst 2970 Switch Command Reference*:

- The command syntax for the **udld** interface configuration command is incorrect in the command reference and the software configuration guide. The correct syntax is **udld port** [**aggressive** | **disable**]; the syntax and usage guidelines incorrectly include the **enable** option. Also, the usage guidelines should use **udld port**, not just **udld**, when referring to this command.
- The command syntax for the **mac address-table static** global configuration command is incorrect in the command reference for this release. The correct syntax is **mac address-table static** *mac-addr* **vlan** *vlan-id* **interface** *interface-id*.

These changes will be included in the next version of the documentation.

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/cat2970/index.htm

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 "Obtaining Documentation" section on page 24.

- *Catalyst 2970 Switch Software Configuration Guide* (order number DOC-7815462=)
- *Catalyst 2970 Switch Command Reference* (order number DOC-7815464=)
- *Catalyst 2970 Switch System Message Guide* (order number DOC-7815465=)
- Cluster Management Suite (CMS) online help (available only from the switch CMS software)
- *Catalyst 2970 Switch Hardware Installation Guide* (order number DOC-7815469=)

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Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available: the Cisco TAC website and the Cisco TAC Escalation Center. The type of support that you choose depends on the priority of the problem and the conditions stated in service contracts, when applicable.

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- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration. There is little or no impact to your business operations.
- Priority level 3 (P3)—Operational performance of the network is impaired, but most business operations remain functional. You and Cisco are willing to commit resources during normal business hours to restore service to satisfactory levels.
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http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC website. Some services on the Cisco TAC website require a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

http://tools.cisco.com/RPF/register/register.do

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC website, you can open a case online at this URL:

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

If you have Internet access, we recommend that you open P3 and P4 cases online so that you can fully describe the situation and attach any necessary files.

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

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- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide,* and the *Internetworking Design Guide.* For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access *Packet* magazine at this URL:

  http://www.cisco.com/go/packet

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

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  http://www.cisco.com/en/US/learning/le31/learning_recommended_training_list.html

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