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Catalyst 5000 Series Release Notes for Release 1.5(4)

These release notes describe the features, caveats, and modifications for the Catalyst 5000 series Release 1.5(4).

Documentation

The following documents are available for the Catalyst 5000 series switch:

- *Catalyst 5000 Series User Guide*
- *Catalyst 5000 Series Hardware Installation and Maintenance*
- *Catalyst 5000 Series Configuration Guide and Command Reference*
- *Catalyst 5000 Series Release Notes for ATM Software*

These documents are available in printed form and in electronic form on UniverCD.

New Features in Release 1.5(4)

This section describes software version 1.5(4) modifications that correct caveats in software version 1.5.

- The 10/100 Mbps Fast Ethernet module does not count some of the packets it receives. In software version 1.5(4), this problem is corrected. (CSCdi51251)
- When you execute the Flash from the Boot-ROM manually, the supervisor engine module fails to come online. This problem is corrected in software version 1.5(4). (CSCdi51006)

New Features in Release 1.5

The Catalyst 5000 Series supervisor engine module software release 1.5 contains support for the Catalyst 5000 Series 10/100 Mbps Fast Ethernet Switching Module (12 Port), and caveat resolutions for software releases prior to software release 1.5. The **set port speed** and **set port duplex** commands for the 10/100 Mbps Fast Ethernet Switching Module are documented in the *Catalyst 5000 Series Configuration and Command Reference*, available in printed form and in electronic form on UniverCD.

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New Features in Release 1.4

Some commands have been changed and new commands added in supervisor engine module software release 1.4 and ATM module software release 1.1 to support ATM modules and LAN emulation. These commands are documented in the *Catalyst 5000 Series Configuration Guide and Command Reference*. This release also supports the 100B FX switching module. Supervisor engine module software release 1.4 supports the following software:

- ATM module software release 1.1 (requires supervisor engine module software version 1.4 or higher)
- FDDI module software release 1.1(1) (requires supervisor engine module software version 1.3 or higher)

New Features in Release 1.3

Some commands have been changed and new commands added in supervisor engine module software release 1.3 to support FDDI/CDDI modules. These commands are documented in the *Catalyst 5000 Series Configuration Guide and Command Reference*. FDDI module software release 1.1 requires supervisor engine module software release 1.3 or higher.

Important Notes

This section describes warnings and cautions about using the Catalyst 5000 series switch software. Unless otherwise stated, these notes apply to supervisor engine module software releases 1.1, 1.2, 1.3, 1.4, 1.5 and 1.5(4).

New Software Release Upgrade

In addition to the existing modules, the supervisor engine module software version 1.4 Flash code and above supports the ATM module. To upgrade the Flash code from supervisor engine module software or Boot PROM version 1.3, 1.4, or 1.5 to 1.5(4), you need to download the software only once, and perform steps 5 through 11. To upgrade the Flash code from supervisor engine module or Boot PROM software version 1.1 or 1.2 to 1.5(4), **you need to download the software twice**, and perform all steps in the following procedure:

1. Before installing an FDDI/CDDI or ATM module, download the supervisor engine module software 1.5(4) Flash code to the supervisor engine module. An error message for each new image appears because the Flash code programming module does not recognize the new images. The errors are expected and do not affect the Flash code download as long as these upgrade steps are followed. An example of this error messages is “Error: Unknown Tag $$$$synatm$$$$ module not loaded.”
2. Wait for the “The system needs to be reset to run the new image” message to appear, indicating that the download is successful.
3. Reset the Catalyst 5000 series switch.

4 Check the supervisor engine module software Flash code version by entering the **show flash** command. The supervisor engine module software consists of the nmp, mcp, lcp, lcp 64K, and atm/fddi files. Notice that the version for atm/fddi file is not found. An example of the command output follows:

```
Console> show flash
File            Version            Size (bytes)
--------------  -----------------  -------------
c5009 nmp       1.5(4)             1007616
      mcp       1.5(4)               26082
      lcp       1.5(4)               25712
      lcp 64K   1.5(4)               21222
      atm/fddi  not found
```

Note The **show flash** command pertains to the revision of the microcode in the management processor of the ATM and FDDI modules, and not to the flash software version of these modules.

5 Download the supervisor engine module software 1.5(4) Flash code to the supervisor engine module again.

6 Wait for the "The system needs to be reset to run the new image" message to appear, indicating that the download is successful.

7 Reset the Catalyst 5000 series switch.

8 Check the supervisor engine module software Flash code version by entering the **show flash** command. Notice that the version of the atm/fddi file is 1.5(4), indicating that the file was successfully loaded.

```
Console> show flash
File            Version            Size (bytes)
--------------  -----------------  -------------
c5009 nmp       1.5(4)             1007616
      mcp       1.5(4)               26082
      lcp       1.5(4)               25712
      atm/fddi  1.5(4)               23115
      lcp 64K   1.5(4)               21222
```

Note The atm/fddi 1.5(4) file, as shown in the **show flash** command, is part of the supervisor engine module software Flash code version 1.5(4). The ATM module software version 1.1 and FDDI module software version 1.1(1) are separate Flash codes that appear after the modules are installed and on line.

9 Insert the FDDI/CDDI or ATM module into the Catalyst 5000 series switch.

10 Wait for the modules to come on line. Then, check the Flash code versions by entering the **show flash** command. The FDDI/CDDI or ATM module should be recognized and should indicate FDDI module Flash code version 1.1(1) and ATM module Flash code version 1.1.

```
Console> show flash
File            Version            Size (bytes)
--------------  -----------------  -------------
c5009 nmp       1.5(4)             1007616
      mcp       1.5(4)               26082
      lcp       1.5(4)               25712
      atm/fddi  1.5(4)               23115
      lcp 64K   1.5(4)               21222
fddi (Module 3) 1.1(1)              -
atm  (Module 4) 1.1                 -
```

Caution Make sure to specify the correct module number when downloading to a switching module. If you download Flash code to the incorrect module, the download will fail.

11 If the module does not indicate the correct Flash code version, download the correct Flash code version to the FDDI/CDDI or ATM module using the **download** *host file [mod_num]* command. In supervisor engine module software releases 1.3, 1.4, 1.5, and 1.5(4), the download is complete when the "Module number *n* is online" message appears.

Consider the following important points:

- If the Catalyst 5000 series switch is reset or if there is a power failure while downloading Flash code to the supervisor engine module or any switching module, the download will be incomplete and the Flash code might be unusable. When the Catalyst 5000 switch boots, the switch will not use the Flash code. Instead, the switch will use the software loaded in PROM. To correct this situation, simply download the new software to flash. When the switch is rebooted, the new software will be used and all installed modules will be recognized.

  If this situation occurs while you are downloading Flash code to the supervisor engine module, the Catalyst 5000 series switch will boot using the supervisor engine module's PROM software. The switch will recognize only modules that were supported at the time the PROM was installed. (Currently, the PROM software will only recognize 10-Mbps Ethernet modules and the two ports on the supervisor engine module.) To correct this situation, simply download the new software to Flash. When the switch is rebooted, the new software will be used and all installed modules will be recognized. This note applies to supervisor engine module software releases 1.3, 1.4, 1.5, and 1.5(4).

Note You may need to download the software twice, as described in "New Software Release Upgrade," if the Catalyst 5000 series switch is reset or if there is a power failure while you are downloading Flash code to the supervisor engine module or any switching module.

- If a module does not come on line after bootup, enter the **show test** *mod_num* command to display detailed information about the failures on the module.

Note Refer to the *Catalyst 5000 Series Configuration Guide and Command Reference* for general information about downloading Flash code and using the **download** command.

VLANs and Trunks

The following section describes VLAN and trunk considerations regarding the Catalyst 5000 series switch:

- The TCP/IP stack of the Catalyst 5000 is only accessible through VLAN 1, the default VLAN. To gain access to the stack using Telnet or SNMP, use a workstation that resides in VLAN 1 or connect to a router that links VLAN 1 with other VLANs. (CSCdi34261)
- When using Telnet to configure a remote Catalyst 5000 series switch, configure trunks on the most remote switch first. If trunks are configured on the local switch or on a switch that is networked to the most remote switch, subsequent data transmission are sent in encapsulated packets, which are unreadable to switches that do not have trunk ports configured.

Modules

The following section describes considerations regarding the Catalyst 5000 series switch:

- After removing a module, wait 20 seconds before replacing it. If you do not wait 20 seconds, the module might not come on line. (CSCdi40206)
- The **upload** command is only supported for uploading software from the supervisor engine module. Do not use the **upload** command for uploading software from any other module.(CSCdi43217)
- You can access the console before the Catalyst switch performs a BOOTP request. As soon as the Catalyst is up and running and the console prompt appears, you can enter commands at the prompt. If an IP address has not been configured or if the IP address is set to 0.0.0.0, the switch waits two minutes for the modules to come on line and then performs a BOOTP request. The switch still performs a BOOTP request even if you set the IP address as soon as the switch is up and running.

CAM Table

The following section describes CAM table considerations regarding the Catalyst 5000 series switch:

- Because of different CAM table implementations, entries in the supervisor engine module's CAM table might not be in the FDDI CAM table. This situation does not affect normal switch operation. This note applies only to supervisor engine module software release 1.3 and higher.
- MAC addresses are stored in the CAM table in an order that provides optimal hardware access and is not in a numerically sorted order. This storage method might cause an SNMP manager to time out while performing an SNMPGetNext request to access the Bridge Forward database table on the Catalyst 5000 series switch. To avoid timing out, increase the SNMPGetNext timeout value on the SNMP manager station.

- If you have more than 20 VLANs, do not set CAM aging time to less than 30 seconds. If CAM aging time is set to less than 30 seconds, spanning tree does not function properly, which causes network instability. (CSCdi40874)
- The number of user-configured multicast permanent and static entries in the CAM table is limited to 128.
- If an ATM module is installed, setting the *CAM agingtime* to a value greater than 300 seconds is not recommended. A value greater than 300 seconds violates the LAN Emulation specification.

MII Transceivers on the Supervisor Engine Module Fast Ethernet Ports

In supervisor engine module software releases 1.1, 1.2, 1.3, and 1.4, when a MII Transceiver is attached to the MII port on the supervisor engine module, the System Diagnostic Loopback test fails. In software release 1.5 and later, this has been corrected.

This error is the result of a failure in the loopback mechanism with the transceiver in place; it does not indicate that the port is bad. When the problem occurs, the following message appears on the system console:

```
Minor hardware problem in Module 1
```

This message can also occur for other failure conditions with more serious consequences. To determine the cause of the message, display the results of the supervisor engine module diagnostic tests using the **show test 1** command. If the System Diagnostic Loopback test failed, ignore the system console message; you can use the MII ports.

Additionally, if you use a MII transceiver, after a port is configured, the link light may not turn green, indicating that the port link is good. If this occurs, disconnect and reconnect the transceiver. You may also correct the problem by resetting the Catalyst 5000. (CSCdi45289)

Miscellaneous Considerations

The following section describes miscellaneous considerations regarding the Catalyst 5000 series switch configuration:

- Depending on the number of VLANs and other parameters configured, the **configure** and **clear config all** commands can take a considerable amount of time to complete. (CSCdi33752)
- Do not use the **set module enable** command to enable a module that is already enabled. The **set module enable** command resets the module; transmission to and from the module is temporarily interrupted. (CSCdi35545)
- Make sure the serial port on the supervisor engine module is connected to a modem or a terminal when you use the **set system modem enable** command; otherwise, the system may continuously reset until you make this connection. Before disconnecting the modem or terminal from the serial port, use the **set system modem disable** command. This has been corrected in systems that contain the 1.4 Boot ROM, and software releases 1.3(1) or 1.4 of the Flash code or above. (CSCdi43784)
- In ATM module software version 1.1, when accessing the ATM module through a session, do not set up an IP address for the ATM interface. Although the ATM module allows you to set an IP address for the interface, the IP address is not used. (CSCdi44641)
- When setting up redundant physical links between Catalyst 5000 series switches, make sure to enable spanning tree. If spanning tree is not enabled, the Catalyst 5000 series switches will experience a broadcast storm, which might freeze the switches.

- After you download Flash code software to the supervisor engine module, you must enter **reset** to reset the switch so that it will use the new image. The following information appears:

```
Console> (enable) reset
This command will reset the system.
Do you want to continue (y/n) [n]? y
```

  After you download Flash code software to the FDDI/CDDI or ATM modules, the module automatically restarts.

- When you insert or replace ATM or FDDI modules, clear the module configuration information, using the command **clear config all** or **clear config** *mod_num*, to obtain the correct spanning tree parameters for the modules.
- Reset the system when module hardware failures occur or you replace failed modules.

Release 1.5(4) Caveats

Caveats in software release 1.5(4) are the same as those listed for software release 1.4, except as noted below in the section "Release 1.4 Caveats/ Release 1.5 Modifications."

Release 1.5 Caveats

Caveats in software release 1.5 are the same as those listed for software release 1.4, except as noted below in the section "Release 1.4 Caveats/ Release 1.5 Modifications."

Release 1.4 Caveats/ Release 1.5 Modifications

This section describes possible, unexpected behavior and other miscellaneous caveats for the supervisor engine module software releases 1.4. The caveats listed here describe only serious problems.

Supervisor Engine Module Software Version 1.4

- Make sure to set the screen length (using the **set length** command) to a nonzero value (for example, 24 lines) before entering commands that have long displays (for example, the **show cam** and **show vlan** commands). If the screen length is set to zero, you cannot interrupt and cancel the display of information on the screen. (CSCdi33985)
- Currently, the **show mac** command displays the InDiscard counter value as zero, instead of the actual counter value for Ethernet ports. (The InDiscard counter tracks the number of frames that the Catalyst 5000 series switch discards because it was destined for the local segment.) (CSCdi39812)
- The LrnDiscard counter (displayed using the **show mac** command) indicates the number of times a CAM entry was replaced with a newly learned address when the CAM table is full. In supervisor engine module software releases 1.3 and 1.4, the counter value is not maintained for each port; instead, the value is maintained for the entire switch. (CSCdi39883)
- Serial download is supported for downloading Flash code to the supervisor engine module, but not to the switching modules. (CSCdi41103)
- When multiple ports are disabled on a module using the **set port disable** or **set module disable** commands, the LED for the port does not turn orange to indicate that the port has been disabled; however, the port stops receiving and transmitting packets. (CSCdi42486)

- When using the **configure network** command, the delete key does not work within the dialog. Use the backspace or control-h keys to delete characters. (CSCdi42907)
- If an external transceiver is attached to a supervisor engine module MII port when you reset or power up the system, the Catalyst 5000 might report a minor hardware failure on the supervisor engine module, and the LINK LED on the MII port of the supervisor engine module may not turn on. These conditions do not seriously affect the Catalyst 5000 unit's switching capability. If they occur, unplug the transceiver, and plug it back into the MII port of the supervisor engine module. (CSCdi45289)
- You cannot disable an ATM module using the **set module disable** command. However, you can disable other module types.

Miscellaneous Caveats in Version 1.4

- Use the **write network** command to save your system configuration before downgrading the system from version 1.4 software to versions 1.3 or 1.2 software. (CSCdi43093)
- The **show cam dynamic** *mod_num/port_num* command shows static CAM table entries in addition to dynamic entries. Static entries are identified with an *. (CSC44944)
- The Catalyst 5000 does not generate a module-up trap for a module whose ports are all disabled. Use the **reset** *mod_num* command to restart the module. (CSCdi 45045)
- The Catalyst 5000 does not generate module traps when you reset modules. (CSCdi45049)
- When an ATM module is installed, the **show netstat ip** command indicates that the supervisor engine module has received frames that are smaller than the required minimum size. (CSCdi45054)
- To disable an Ethernet module that is participating in a spanning tree, use the **set port disable** *mod_num/port_num* command to disable all of the ports of the module. (CSCdi45228)
- The **show port** command shows disabled, unconnected ports as faulty. (CSCdi45229)
- Keep a record of any port traps you disable with the **set port trap** command. All ports are enabled by default. If you do not know the status of a port setting, reset the port using the **set port trap** command. (CSCdi45404)
- In software releases previous to 1.5, do not configure trunk ports to be redundant with non-trunk ports. Use the **set trunk** *mod_num/port_num vlans* command for all redundant links on 100BaseTX and 100BaseFX modules, to prevent a broadcast storm that may last two or three seconds. This problem has been fixed in software release 1.5. (CSCdi45494 and CSCdi45558)
- A diagnostic test for detecting FDDI and ATM port PMD failures does not function properly. Instead of disabling the failed port and reporting a serious hardware problem, it brings the FDDI or ATM module on line with a green status LED. This problem has been fixed in software release 1.5. (CSCdi45710)
- The SNMP reported value of *ifOutUcastPkts* for ports (as defined in MIB2) may decrease over time. This error has been fixed in software release 1.5. (CSCdi46040)
- If you are using a software release prior to 1.5 and you **ping** a Catalyst 5000 switch from a workstation that generates a total packet length of 91 bytes, the Catalyst 5000 series supervisor engine module may stop responding. If this occurs, you must reset the Catalyst 5000. This problem has been fixed in software release 1.5. (CSCdi46320)

- Frames may be lost or a port may become locked up on a10BaseT or 10 BaseFL card when there is an excessively high consecutive collision rate during extremely heavy traffic. This problem has been fixed in software release 1.5. (CSCdi47105)
- The bridge MIB does not report ISL ports information correctly. This problem has been fixed in software release 1.5. (CSCdi47656)

Release 1.3 Caveats/Release 1.4 Modifications

This section describes possible, unexpected behavior by release 1.3. Unless otherwise noted, these caveats apply to supervisor engine module software 1.1, 1.2, and 1.3 software releases. The caveats listed here describe only serious problems.

- After setting a trunk on a port, disable and reenable the port. With supervisor engine module software release 1.4 and later, you do not need to disable and reenable a port after setting it to be a trunk port. (CSCdi43126)
- In supervisor engine module software release 1.3, the source IP address in the IP unreachable message generated by the Catalyst 5000 series switch is incorrect. In release 1.4, this has been corrected. (CSCdi43167)
- CDDI is not supported in FDDI module release 1.1. In FDDI module software release 1.1(1), CDDI is supported. (CSCdi43844)
- Using FDDI software release 1.1, the Catalyst 5000 does not handle the translation of FDDI 802.2 IPX frames correctly. In FDDI module software release 1.1(3), this problem is corrected. (CSCdi45412)
- Using FDDI software release 1.1, the Catalyst 5000 does not correctly handle the translation of DECNET Ethernet frames, causing some connectivity problems. In FDDI module software release 1.1(3), this problem is corrected. (CSCdi45546)
- The FDDI software release 1.1 contained diagnostics that were not appropriate for the FDDI module. These diagnostics are not in the FDDI module software release 1.1(3). (CSCdi45913)

Release 1.2 Caveats/Release 1.3 Modifications

This section describes possible, unexpected behavior by supervisor engine module software release 1.2. The caveats listed here describe only serious problems. All caveats listed in this section are resolved in supervisor engine module software release 1.3.

- Dots appear on the console while the switching module software is being downloaded from the supervisor engine module. Although the dots on the console may interrupt the administrative interface display, they do not affect the switch functionality. After the switching module software has been downloaded, press **Return** to display the standard prompt. For example, after the Catalyst 5000 series switch has booted and the Enter password prompt is displayed, dots appear on the console. Press **Return**, and when the Enter password prompt appears again, press **Return** (if no password is set) or enter the correct password. In supervisor engine module software release 1.3, this situation only occurs when downloading to the FDDI/CDDI module.

  After entering the **clear config** command, dots appear on the console while the switching module software is downloaded. Press **Return** to display the `Console>` prompt. In supervisor engine module software release 1.3, this has been corrected.

  Make sure to reassign the IP address in order to communicate with the switch (or use the **reset** command if you have BOOTP).

- After removing and replacing a switching module, the counters for the switching module are not initialized to zeros. Enter the **clear counters** command to reset the counters manually. In supervisor engine module software release 1.3, switching module counters are automatically reset.
- The **download serial** command is not supported in this software release; do not use this command in this software release. If you try to enter this command, the existing Telnet connection hangs, and the console port is inaccessible. If this occurs, reset the switch by turning the power off and then back on. In supervisor engine module software release 1.3, this command is supported. (CSCdi33480)
- SLIP is not supported in this software release. Do not use the **slip attach** or **slip detach** commands in this software release. In supervisor engine module software release 1.3, SLIP is supported and these commands can be used. (CSCdi35706), (CSCdi35707)
- Clearing a trunk port that has been set to full duplex causes the port transmission type for that port to change to half duplex. In supervisor engine module software release 1.3, this caveat has been fixed. (CSCdi35594)
- Supervisor engine module software release 1.2 does not support MII Fast Ethernet transceivers that require a startup command sequence. supervisor engine module software release 1.3 does support MII Fast Ethernet transceivers that require a startup command sequence.

Release 1.1 Caveats/1.2 Modifications

This section describes possible, unexpected behavior by supervisor engine module software release 1.1. The caveats listed here describe only the serious problems. All caveats listed in this section are resolved in supervisor engine module software release 1.2.

Redundant Links

- In supervisor engine module software release 1.1, when creating redundant links between two Catalyst 5000 series switches in your network, using 100BaseTX ports on the supervisor engine module, you could not include VLAN 1 in these redundant ISL trunk links. If VLAN 1 was included in both links, under certain conditions, spanning tree could unblock the redundant link creating a loop.

  In supervisor engine module software release 1.2, there are no restrictions as to which VLANs can be included in any given ISL trunk.

Broadcast Loop Window

- Enabled ports are set to FORWARDING by default in supervisor engine module software release 1.1. However, a broadcast loop may occur before spanning tree detects the loop condition, and can transition the port out of FORWARDING state.

  In supervisor engine module software release 1.2, the ports that are enabled and do not have an active link are described as “not connected” in the show spanning tree displays. As soon as a port is physically connected, the spanning-tree algorithm puts that port into BLOCKING mode.

  The port will remain enabled so that if a cable is connected, the link will become active, and will be detected by the normal port-polling mechanism. Spanning tree, if enabled for the VLAN, will be alerted to manage the port status.

If you disable spanning tree, you then become responsible for configuring the LAN without loops in it. You must make sure that no two ports of the same Catalyst 5000 series switch will be connected to the same physical segment if the spanning tree is disabled. The ports will begin forwarding when the link is good. (CSCdi35635)

Disabled Ports

- In supervisor engine module software release 1.1, disabled ports were not showing up in VLAN. When the VLAN or trunk setting is performed on the port, the port will come out of the disabled state.

  In supervisor engine module software release 1.2, this has been resolved.(CSCdi36028), (CSCdi36119), (CSCdi36158)

Show CAM

- In supervisor engine module software release 1.1, the **show cam** command interferes with hello packet timing. It affects the ability of the switch to send spanning-tree hello packets in exact intervals. These intervals depend entirely on the hello time set, but are set in two-second intervals by default. Using commands with longer displays will affect the catalyst to generate spanning-tree hello frames in intervals that are significantly longer than 2 seconds. In this case it is best to avoid using any of the longer display commands.

  In supervisor engine module software release 1.2, show CAM has been modified to yield the CPU more often. Hello packets are now very close to 2 seconds while show CAM is running. (CSCdi34732)

ISL Links

- In supervisor engine module software release 1.1, ISL links do not forward. When a **set trunk** command is issued, the port will not forward on VLAN. After a system restart, the trunk port will function properly.

  In supervisor engine module software release 1.2, this has been resolved. (CSCdi36134)

VLANs

- In supervisor engine module software release 1.1, when a port was moved from one VLAN to a new VLAN, broadcast traffic destined for the older VLAN would still flood into the current port.

  In supervisor engine module software release 1.2, this has been resolved. (CSCdi38956)

Cisco Information Online

Cisco Connection Online (CCO), formerly Cisco Information Online (CIO), is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional content and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously—a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, Internet e-mail, and fax download options, and is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: `http://www.cisco.com`.
- Telnet: `cco.cisco.com`.
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and baud rates up to 14.4 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact `cco-help@cisco.com`. For additional information, contact `cco-team@cisco.com`.

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This document is to be used in conjunction with *Catalyst 5000 Series Configuration and Command Reference*, the *Catalyst 5000 Series Hardware Installation and Maintenance Guide*, and the *Catalyst 5000 Series User Guide* publications.

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