Catalyst 3900 Token Ring Switch Release 1.0(2) Release Note

October 3, 1997

This document contains information about the Catalyst 3900 Token Ring Switch that was not included in the *Catalyst 3900 Token Ring Switch User Guide*. It also contains a list of known problems. This document is available on the Cisco Connection Documentation CD-ROM or in print.

Sections in this document include the following:

Amendments to the Documentation

This section contains information that was not included in the *Catalyst 3900 Token Ring Switch User Guide*. The headings in this section correspond with the applicable section titles in the documentation.

Configuring Basic Switch and Stack Parameters

The MAC address (burned in or locally administered) displayed on the Switch Information panel is used as the basis for the MAC addresses of the ports and VLANs of the switch. For more information about how MAC addresses are assigned, refer to the "Codes and IDs" appendix.

Viewing Module Information

The Module Information panel has been enhanced. The Revision field as documented in the *Catalyst 3900 Token Ring Switch User Guide* has been replaced with two fields:

- HW Rev—Hardware revision level of the module.

- FW Rev—Firmware revision level of the module.

The module numbers displayed on the Module Information panel have the following meaning:

- 1—Base switch

- 2—Front, left expansion slot

- 3—Front, right expansion slot

- 4—Rear stack port slot

The possible statuses of a module are up, down, and empty. Up indicates that the module is properly installed. It does not imply that any ports on the module are connected and operational.

Configuring VLANs and VTP

The VLAN with the VLAN name of "default" is an Ethernet VLAN and is the VLAN that will be used to transmit information for Cisco proprietary protocols, such as VTP and CDP.

A *management domain* is a logical grouping of VLANs used by the VLAN Trunking Protocol (VTP) for the purpose of administration and management. VTP parameters are propagated throughout the VLANs within a single management domain. While you can have duplicate VLAN names in a network, each VLAN name within a management domain must be unique. A management domain is not device specific. Different devices may belong to the same management domain if the VLANs defined for the devices belong to the same management domain. Likewise, a device may belong to multiple management domains if the VLANs defined for the device belong to different management domains.

The possible values for the State of a VLAN are Operational and Suspended. By default, all VLANs are Operational. You can change the states for TrBRFs and TrCRFs only. The fact that a VLAN is operational does not mean that you can assign spanning-tree parameters to it. You can assign ports to only those TrCRFs that have been configured for the local switch. And you can assign spanning-tree parameters to only those TrCRFs for which ports have been assigned.

For TrCRFs, you can configure the ring number or allow the Catalyst 3900 to learn the ring number. To enable ring number learning, you must set the Local Mode (on the VTP Administrative Configuration panel) to Transparent and the Ring Number (on the VTP VLAN Parameter Configuration for the TrCRF) to auto. If you have set the Local Mode to Client or Server, you cannot set the Ring Number to auto. Also, if you have previously set the Local Mode to Transparent and the Ring Number to auto, you cannot change the Local Mode while ring number learning is in progress.

Configuring IP Information

The IP information that you can configure is associated with a TrBRF. Therefore, if the ports of the Catalyst 3900 are assigned to more than one TrBRF, when you select IP configuration you will be presented with a list of possible TrBRFs from which to choose.

Configuring SNMP Information

The SNMP information that you can configure is associated with a TrBRF. Therefore, if the ports of the Catalyst 3900 are assigned to more than one TrBRF, when you select SNMP Configuration you will be presented with a list of possible TrBRFs from which to choose.

Monitoring Port Traffic

A Switched Port Analyzer (SPAN) port performs the function of port mirroring. Traffic on the monitored port is copied to the monitoring port.

Before you use a SPAN port to monitor traffic, make sure that the SPAN port is isolated by assigning it to its own TrCRF and TrBRF. See "Configuring VLANs and VTP" for more information about how to define a TrBRF and a TrCRF, and how to assign a port to a TrCRF.

You cannot specify a port that is a member of a TokenChannel as a monitoring port. Likewise, you cannot add a port that has been specified as a monitoring port to a TokenChannel.

Limiting Scope and Access

The *Catalyst 3900 Token Ring Switch User Guide* incorrectly states that you can change the names assigned to protocol classes. You cannot change the names.

Viewing the Message Log

The Message Log Information panel has been enhanced. The log can now maintain a list of up to 200 messages. Once 200 messages have been logged, new messages received will be added to the end of the log and the oldest message will be deleted from the panel. The log entry numbers continue to increment, indicating the total number of messages received.

To view the message log, select **Message Log Information** from the Statistics panel. The first (oldest) seven messages are displayed. You can use the options at the bottom of the panel to move through the message log.

- To page forward in the log, select **More**.

- To move to the end of the message log, select **End**. The latest seven messages are displayed.

- To return to the beginning of the message log, select **Start**.

To delete all messages from the message log, select **Clear**. You will be prompted to confirm your request to clear the log.

Fixed Problems

This section lists problems that were currently listed as known problems and have been resolved in this release.

Problems with Protocol Filter Entry MIB

Problem Identifier: CSCdj32039

Problem Description: With Catalyst 3900 units in a stack, it is possible, in certain rare situations, for the ciscoTsProtocolFilterEntry MIB table to return erroneous information.

Problems with Address Learning on TokenChannels

Problem Identifier: CSCdj32479

Problem Description: The following warning message can appear when TokenChannels are configured and more than 1600 addresses have been learned on one of the TokenChannel ports:

```
---------------------------- WARNING MESSAGE ----------------------------
-                                                                       -
- QTP_FindCpuEntry: Could not find corresponding CPU entry             -
-                                                                       -
-                                                                       -
---------------------- Press  key to continue --------------------------
```

This message indicates that a mismatch has been detected between the Port Address Table and the Master Address Table due to incorrect demand aging of Port Address Table entries.

Filter Definitions Allowed for Disabled or Non-existent Ports

Problem Identifier: CSCdj35464

Problem Description: It is possible to define filters from SNMP for switch ports that are either non-existent or permanently disabled.

Problems Forwarding Frames Through SRT

Problem Identifier: CSCdj36482

Problem Description: The Catalyst 3900 can fail to forward frames correctly through a SRT bridge. When Source Route Transparent (SRT) mode is configured for the bridging mode of two TrCRF's, traffic may not be forwarded correctly after a Spanning Tree topology change takes place.

Switch Reset

Problem Identifier: CSCdj38671

Problem Description: The Catalyst 3900 can reset under heavy traffic conditions in a back-to-back stack configuration. The following message may be displayed before the switch resets:

AddressLearning: Invalid IBCP Packet

Secondary Ports in TokenChannel Lose Ring Number in SRB Mode

Problem Identifier: CSCdj39048

Problem Description: If Catalyst 3900 switches are connected using multiple port TokenChannels, and the TrCRFs are configured in SRB mode, the sessions can be lost. When the switch learns an address or a route descriptor, it is moved from the primary token channel port to a secondary port. In the SRB case, the route descriptor was not being moved properly.

Single Port Loopback Fails

Problem Identifier: CSCdj39207

Problem Description: When the switch is powered up, one or more of the following messages may be displayed ".Error: CPA Receive Packet Discarded Buffer Overflow Register" or ".Error: CPA Receive Packet CRC Errors Register". After the switch has completely booted, one or more ports may be disabled.

Conflicts Between TokenChannel and SPAN

Problem Identifier: CSCdj40830

Problem Description: Unpredictable behavior can result from configuring a Token Ring port as a TokenChannel and a SPAN port. TokenChannel and the analyzer function may operate incorrectly.

Invalid TokenChannel Port Assignment

Problem Identifier: CSCdj40834

Problem Description: It is possible to assign the ports of a TokenChannel to more than one TrCRF using an SNMP manager.

Misdirected Frames

Problem Identifier: CSCdj41266

Problem Description: Misdirected frames sent to the CPU interface chip or across the stack port.

Problems Forwarding Multicast Frames

Problem Identifier: CSCdj41318

Problem Description: The internal switching bus pauses indefinitely while attempting to transmit multicast packets from the CPU, thus, preventing frames from being switched from port to port.

Problems in Heavy Traffic

Problem Identifier: CSCdj41520

Problem Description: The switch stops forwarding traffic and the boxes become unstacked under a heavy traffic load.

Memory Problems

Problem Identifier: CSCdj41521

Problem Description: The switch console stops responding when the switch runs out of memory.

Using Telnet to Display Summary Causes Switch Reset

Problem Identifier: CSCdj41951

Problem Description: The Catalyst 3900 will reset if the customer attempts to display the box configuration summary from a telnet session.

Remove Starting VMPS Task Message from Console

Problem Identifier: CSCdj42465

Problem Description: The message "Starting VMPS task" will be displayed on the console during the switch's boot process.

Problems Repeatedly Moving Stations

Problem Identifier: CSCdj42675

Problem Description: A station connected to a switch is repeatedly moved and then fails to connect to a server or a mainframe host.

Known Problems

This section lists the currently known problems.

Problems Learning Ring Numbers After the Port has Inserted

Problem Identifier:CSCdj11644

Problem Description: A TrCRF in auto ring number mode will learn its ring number from a Ring Parameter Server (RPS) only if one its ports receives an Initialize Ring Station MAC frame during its insertion process. This means that a TrCRF will not learn its ring number from an RPS Initialize Ring Station frame if the RPS sends the frame after all ports of the TrCRF are inserted into their respective rings.

Recommended Action: If you find that it is necessary for a TrCRF to update its ring number from an RPS after all of its ports are inserted, do the following:

Step 1   Make sure your TrCRF ring number is auto.

Step 2   Locate the TrCRF port that is attached to the ring on which the RPS resides and disable that port.

Step 3   Wait for that port to de-insert from the ring.

Step 4   Enable the port again.

As the port rejoins the ring, the TrCRF should re-learn its ring number from the RPS.

Unsupported MIB Object

Problem Identifier: CSCdj15617

Problem Description: The MIB object ciscoTsPortCfgBcastSuppression is not implemented.

Recommended Action: None.

Duplicate Address Information not Available via SNMP

Problem Identifier: CSCdj21079

Problem Description: The list of locally administered MAC addresses that have been detected as duplicate (and therefore have been filtered on a port or ports by the Catalyst 3900) cannot yet be retrieved through SNMP with queries of ciscoTsDupAddrFilterTable in the Catalyst 3900 MIB. All SNMP get-requests for the ciscoTsDupAddrFilterTable in the Catalyst 3900 MIB will return noSuchName.

Recommended Action: A warning is issued to the Catalyst 3900 console when a duplicate MAC address filter is enabled. These warnings are saved in the message log, which can be accessed using the Message Log Information option on the Statistics menu. If the system message log wraps, however, these indications will be lost. Also, you can use the Master Address Table panel and VLAN Address Table panel to determine the ports on which a duplicate address is filtered.

Problems with Statistics Counters

Problem Identifier:CSCdj21123

Problem Description: Several counters on the Catalyst 3900 console Port Statistics, General Statistics display have different precision than the rest of the counters displayed on the same panel. These counters may, therefore, roll over sooner.

The following counters are 20 bit counters, the rest are 32 bit counters:

- NSR Frames Forwarded

- SRF Frames Forwarded

- STE Frames Forwarded

- ARE Frames Forwarded

- MAC Frames Forwarded

- Duplicate Ring Number

- Invalid RIF RC Field

- RIF Length Exceeded

- Explorer Overflow

- Ring Number Mismatch

- Frames Filtered - Addr

- Frames Filtered - DSAP

Recommended Action: In cases where the counters are compared to one another, use the Reset option to clear the counters, and then closely monitor the counters, noting whether some of the counters have rolled over while others have not.

Problems with Address Learning

Problem Identifier:CSCdj21332

Problem Description: The Catalyst 3900 serial port console can sometimes display the following message:

```
--------------------------- WARNING MESSAGE ---------------------------
-                                                                     -
- AddressLearning: Dup. addr. det. 404687:B4DD06, Box: 1, Port: 8     -
-                                                                     -
---------------------- Press  key to continue ------------------------
```

This indicates that the switch has detected a duplicate address in the network or that a station was moved from one port to another on the Catalyst 3900. When a station is moved, its address will be learned on the new port and may still be in the address tables of the old port.

Recommended Action: None.

Unable to Exit Menu Busy Message

Problem Identifier:CSCdj22268

Problem Description: When either the IP Configuration or the Spanning Tree menus are selected from the Configuration menu and then the same menu is accessed from another console session, the MENU BUSY message appears at the bottom of the screen. But, there is no Return on the panel.

Recommended Action: Press the down arrow key to return to the Configuration Menu or use the Ctrl-P key sequence to return to the Main Menu.

Spanning Tree Mode does not Default to Forwarding

Problem Identifier:CSCdj22253

Problem Description: The user disables spanning tree on a TrBRF and the ports do not begin forwarding across a bridge. Spanning tree is required in a network where redundant paths exist. This problem occurs if a TrBRF has blocked a TrCRF from forwarding and spanning tree is then turned off. The switch will not automatically set the blocked TrCRFs to the forwarding state.

Recommended Action: The network administrator must remove all redundant paths and set the TrCRF to a forwarding state.

Problems Using the Esc Key on the VLAN and VTP Configuration Panel

Problem Identifier:CSCdj22543

Problem Description: If you press the Esc key while you are on the VLAN VTP Configuration panel, multiple items on the current panel may be highlighted or the panel may appear to have information from a previous panel. This problem typically occurs when a user is trying to negate a selection using the Esc key or returning to a previous panel during a refresh.

Recommended Action: The display can be refreshed using the Ctrl-L key sequence.

Problems with Large Frames Destined for the Spanning Tree Functional Address

Problem Identifier:CSCdj23476

Problem Description: If a device attached to a port begins to flood a given port with large frames (over 4K) addressed to the spanning tree functional address, the message STP: Cpubuf_to_Netbuf No More Memory is displayed and a fatal error could occur.

Recommended Action: Identify the faulty device that is flooding the given port and remove it from the network.

Activity LED does not Accurately Indicate Traffic

Problem Identifier:CSCdj23628

Problem Description: As network activity increases and decreases, the port activity LED does not change the rate at which it flashes.

Recommended Action: None.

Problems with Back-to-Back Catalyst 3900 Stacks

Problem Identifier:CSCdj24642

Problem Description: Under very heavy traffic conditions, a stack of two Catalyst 3900's connected back-to-back, can split and reform. This problem is still under investigation.

Recommended Action: None

BPDU Flag Incorrectly Set During Spanning Tree Convergence

Problem Identifier:CSCdj24809

Problem Description: During spanning tree convergence the switch may inadvertently leave an incorrect flag set in the BPDU.

Recommended Action: No action is required as STP convergence is not effected.

Problems Establishing a Connection to a 4 Mbps FDX Concentrator Port

Problem Identifier:CSCdj27421

Problem Description: If a port has been configured as a 4 Mbps, FDX, concentrator port, it will not establish a connection with stations configured for auto media speed-sensing.

Recommended Action: If possible do not set the media speed for FDX ports to 4 Mbps. If a 4 Mbps, FDX connection is required, configure both the ends of the connection to fixed 4 Mbps.

Problems Using Olicom Adapters at 4 Mbps

Problem Identifier:CSCdj28200

Problem Description: An Olicom adapter configured for 4 Mbps may not open when directly connected to the switch.

Recommended Action: Either disable and enable the port, or change the adapter speed to 16 Mbps and reset it back to 4 Mbps.

Multiple Informational Messages for TokenChannel State Changes

Problem Identifier: CSCdj28207

Problem Description: When the ports comprising a TokenChannel close, when additional ports are added, or when the cables are moved, multiple informational messages are displayed. The messages inform the user that the TokenChannel has gone through the active and failed states.

Recommended Action: Clear the messages by pressing the Esc key or by using the Ctrl-D key sequence.

Inconsistencies with the TrCRF Maximum Bridge Hop Count Parameters

Problem Identifier:CSCdj31691

Problem Description: The TrCRF hop counts for ARE and STE explorers displayed on the console can appear as 14, which is outside the valid range. This problem occurs if an SNMP manager is used to set the value to 14. This may cause explorers with 30 byte routing information fields to be dropped and not forwarded across a TrBRF.

Recommended Action: Users should only set hop counts to the values 1 through 13.

Problems Inserting into the LAN Master TR 16 Retiming Hub

Problem Identifier: CSCdj33434

Problem Description: There are known problems associated with inserting Catalyst 3900 ports into the Transition Engineering, Inc. LAN Master TR 16 Retiming Hub.

Recommended Action: If you experience problems opening into this particular concentrator, do the following:

Step 1   Check the Operation Mode of the Catalyst 3900 port on the Port Configuration panel. If it is A-unknown, then configure it to be HDX station.

Step 2   Check the Media Speed of the Catalyst 3900 port on the Port Configuration panel. If it is A-unknown, then configure it to be the speed at which the Transition Engineering concentrator is currently running.

Step 3   Insert the Catalyst 3900 port into another MAU. Once the port opens, quickly move it out of that MAU and into the Transition Engineering hub.

Problems Resetting Ports 2 Through 4 of Each QMAC

Problem Identifier:CSCdj33773

Problem Description: A station that is directly connected to the switch during a reset may experience ring errors while the switch is resetting. This is because during a reset, the switch disables the port, but does not completely close it. The result is a partial repeat path that may cause some stations to go through a normal error recovery sequence.

Recommended Action: No action is necessary. The condition is corrected when the switch finishes its power up sequence.

Problem Pressing Esc During a TFTP Download

Problem Identifier:CSCdj34650

Problem Description: A TFTP code download fails when the user tries to clear a message from a telnet or console screen. This problem occurs if a TFTP code download is in progress and an event occurs that causes a message to be displayed on the screen. The user presses the Esc key to clear the message and the download is aborted.

Recommended Action: Do not press Esc to clear the message until after the code has been downloaded and written to flash. The user will see the prompt to press the Return key below the message box. This problem will be corrected in a future code release.

Clearing the System Password

Problem Identifier:CSCdj36498

Problem Description: Clearing the system password requires you to reset the switch.

Recommended Action: When you select **Clear the System Password** on the System Request Menu, you will be prompted to confirm your request. You must then press the Reset button to reset the switch and complete the process of clearing the password.

Problems Setting the State for TrBRFs to Suspend

Problem Identifier:CSCdj36485

Problem Description: On the VTP VLAN Parameter Configuration panel, setting the State to Suspend does not work correctly for a TrBRF with TrCRFs configured. The TrBRF can be suspended, but it does not recover correctly when placed back in Operational mode.

Recommended Action: Reset the Catalyst 3900 to restore the TrBRF operation.

Problems Moving Ports During Heavy Traffic

Problem Identifier:CSCdj37605

Problem Description: Under extremely heavy traffic conditions (with frames of length greater than 3K bytes and spanning tree enabled at the TrCRF & TrBRF levels), moving a port from another TrCRF/TrBRF to the TrCRF where there is heavy traffic will cause the console to hang or the message Entering Debugger... Invalid Memory Access to be displayed.

Recommended Action: Avoid reconfiguring (moving ports in and out of TrCRFs) the network under heavy traffic conditions, especially when large frames (length greater than 3K bytes) constitute the bulk of the traffic. If this situation happens, resetting the switch is the only remedy.

Cannot Terminate Telnet Session

Problem Identifier:CSCdj37544

Problem Description: The console cannot always be used to terminate telnet sessions to the switch.

Recommended Action: None

Unexpected Message

Problem Identifier: CSCdj37742

Problem Description: The following warning message can appear:

```
----------------------------- WARNING MESSAGE ----------------------------
-                                                                        -
- QTP_Task(): CmdDone not expected here                                  -
-                                                                        -
-                                                                        -
----------------------- Press  key to continue ---------------------------
```

Recommended Action: None. This message is currently being investigated.

MIB Objects Return Incorrect Values

Problem Identifier:CSCdj37783

Problem Description: The following three MIB objects will return values with the incorrect magnitude. The values should be in 1/100's of a second, instead the values are actually in seconds.

- dtrCRFSpTreeMaxAge
- dtrCRFSpTreeHelloTime
- dtrCRFSpTreeForwardDelay

Recommended Action: Multiply the returned number by 100 to get the value in 1/100's of a second.

Number of Resets Since Diagnostics Counter Doesn't Reset

Problem Identifier:CSCdj38669

Problem Description: Running the diagnostics while resetting the box does not clear the counter.

Recommended Action: None.

Speed Error Detected Incorrectly

Problem Identifier:CSCdj39692

Problem Description: A switch that is running on a 4 Mbps ring can incorrectly detect a speed error in rare cases.

Recommended Action: Reset the switch port from the port configuration panel using the disable and enable commands. Be sure to configure the speed as 4 Mbps, not autosense. Also, make sure to exit the panel between the disable and the enable commands.

Problems Reading the MIB2IF Variables via SNMP

Problem Identifier:CSCdj41946

Problem Description: SNMP management agents will not see the correct value when reading the MIB2IF variable interfaces.ifTable.ifEntry.ifInOctets.1261

Recommended Action: None.

Duplicate Address Test Not Working Correctly

Problem Identifier:CSCdj41987

Problem Description: Stations cannot establish sessions if they are using duplicate MAC addresses.

Recommended Action: Change the locally administered address on one of the network stations.

Authentication Trap not Being Sent

Problem Identifier:CSCdj42684

Problem Description: If you have a community string "private" defined on the switch and send an SNMP set with "pri" it will not result in an authentication trap. Instead a "No Such Name" error will be returned. If you send a completely different string, such as "xxx" in a SNMP set, then it will time-out and send a trap.

Recommended Action: None.

IP Communications Lost when Spanning Tree is Modified via SNMP

Problem Identifier:CSCdj43061

Problem Description: If an SNMP manager is modifying spanning tree configuration information, specifically the TrBRF mode, IP communications may be lost.

Recommended Action: Modify the TrBRF spanning tree mode from the console.

Aging Level set via SNMP not Reflected Correctly at Console

Problem Identifier:CSCdj43063

Problem Description: The console does not reflect that demand aging has been disabled when the aging level is modified by an SNMP manager.

Recommended Action: None.

Conflict Between RMON and SNMP

Problem Identifier:CSCdj43071

Problem Description: Creating an entry in the unsupported RMON group alarm halts the SNMP agent in the box.

Recommended Action: Do not attempt to add entries to the RMON group alarms.

Incorrect Values in DTR-MAC MIB

Problem Identifier:CSCdj43075

Problem Description: The values for the access protocol, individual address count, and phantom drive support are not correct when read from an SNMP agent.

Recommended Action: Read the information from the switch console.

QMAC Problem

Problem Identifier:CSCdj43430

Problem Description: The following messages are seen on the switch console:

"QMAC_ExecuteCommand: QMAC (adr 0x50100000 - port n) returned 0x8000",

"QTP_Task(): CmdDone not expected here", "QTP_FSM: Port n: QMAC Not Responding - Resetting ports (event 13, state 2)".

Recommended Action: Reset the port, reset the box with diagnostics, or call your Cisco support representative.

Availability of Catalyst 3900 Software Upgrades on CCO

When changes are made to the Catalyst 3900 software, the new image is posted to the Cisco Connection Online (CCO). You can then obtain a copy of the image and download it to your switch.

Note The Catalyst 3900 boot and boostrap images that are available on CCO have not been upgraded. These images are provided for emergency purposes only. Do not use these images unless instructed to do so by Cisco TAC personnel.

Obtaining Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section "Service and Support" in the information packet that shipped with your product.

Note If you purchased your product from a reseller, you can access Cisco Connection Online (CCO) as a guest. CCO is Cisco Systems' primary, real-time support channel. Your reseller offers programs that include direct access to CCO's services.

For service and support for a product purchased directly from Cisco, use CCO.

Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information 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, product documentation, 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, and Internet e-mail, and it 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

- WWW: http://www-europe.cisco.com

- WWW: http://www-china.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 connection rates up to 28.8 kbps.

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

Note   If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.