Planning for Configuration and Management

Read this chapter before using the Catalyst 2600 in your network. This chapter contains information and instructions that are useful in preparation for using the Catalyst 2600 in your network. This chapter provides the following information:

- Considerations for Using the Catalyst 2600
- Recording Your Configuration Information
- Using a Serial Link Connection
- Using a Telnet Session
- Using the Console Panels
- Customizing the Console Session

Considerations for Using the Catalyst 2600

This section discusses topics you should consider prior to implementing the Catalyst 2600 in your network.

Required Network Preparation—Frame Length Limit

The maximum frame length supported by the Catalyst 2600 is 4540 bytes (including the Frame Control [FC] and the Frame Check Sequence [FCS] characters). Be sure to configure all network software, interconnecting products, workstations, and user applications to send frames no larger than 4540 bytes.

In cut-through mode, the Catalyst 2600 truncates frames larger than 4540 bytes and adds an abort sequence at the end. Typically, if frames larger than 4540 bytes are sent, a network manager will detect the abort sequences from the Catalyst 2600.

In store-and-forward mode, switch ports will drop larger frames and generate a soft error on that port's LAN segment. The Catalyst 2600 provides statistics regarding frames that are too long. For more information, refer to "Viewing Statistics for a Specific Port" in "Managing Your Catalyst 2600."

Duplicate MAC Addresses

With source-route switching, your network can contain duplicate MAC addresses. If there are duplicate MAC addresses in your network, they must be separated from the Catalyst 2600 by a source-route bridge. Otherwise, the Catalyst 2600 will learn the MAC address on more than one port and will not be able to accurately forward frames for that address.

SNMP Management

If you are using the Catalyst 2600 in an SNMP-managed network, you must configure an initial IP address and the SNMP parameters from the console panels. You can then use either the console panels or an SNMP managing entity to view or change all parameters and management information, except the spanning tree parameters. You can view, but not change, the spanning-tree parameters from an SNMP manager.

The Catalyst 2600 provides five MIBs for use with SNMP-based management systems. There are four standard MIBs, which are defined by RFCs and are included with most SNMP management applications. The fifth is a proprietary MIB created specifically for the Catalyst 2600. The standard MIBs used are:

- Management Information Base for Network Management of TCP/IP-based Internets: MIB-II (RFC 1213)

- Evolution of Interfaces Group of MIB-II (RFC 1573)

- Definitions of Managed Objects for Bridges (RFC 1493)

- IEEE 802.5 Token Ring MIB (RFC 1231)

Each Catalyst 2600 kit has a disk containing these MIBs. If your network is SNMP managed, give this disk to the network management operator so that it can be compiled into the SNMP-based network manager. If you are not currently using an SNMP manager, store the disk for future use.

Universal Feature Card Configuration

The Catalyst 2600 contains two Universal Feature Card slots that will accommodate optional, field-installable, Universal Feature Cards (UFCs), which provide additional connections. If you are installing a UFC with your Catalyst 2600, configure the UFC per the instructions shipped with it before you customize your Catalyst 2600.

Note   If you are required to load new microcode for the UFCs, do so before customizing your Catalyst 2600. If you configure the Catalyst 2600 and then load new microcode, the customized configuration data might be lost.

Recording Your Configuration Information

Prepare a Configuration Parameters worksheet for each Catalyst 2600 you plan to install. The items on the worksheet follow the same order as the fields that appear on the console panels.

Step 1   Make a copy of the Configuration Parameters Worksheet (from the "Worksheets" appendix) for each Catalyst 2600 you will install.

Step 2   Configure the Catalyst 2600 and fill in the worksheet as you read, or fill in the worksheet now and configure the switch later. In either case, it is important to have a completed worksheet on file because it represents the only backup of the Catalyst 2600 configuration data.

Using a Serial Link Connection

The front of the Catalyst 2600 contains an EIA 232 port. This port allows you to establish a serial link connection with the Catalyst 2600. Using this connection, you can access the Catalyst 2600 console panels, which you can use to configure, monitor, and manage the Catalyst 2600.

You can establish either a local or remote connection to the Catalyst 2600. For a local connection, you directly connect a PC, or other DTE, to the EIA 232 port on the Catalyst 2600. For a remote connection, connect a modem to the EIA 232 port then dial in from your remote workstation.

Connecting a Local Terminal

To connect a local terminal to the Catalyst 2600, perform the following steps:

Step 1 Begin running your terminal emulation software on the PC or other DTE to which you will connect the Catalyst 2600.

Step 2 Set the terminal using the parameters listed in Table 4-1.

Table 4-1 **Terminal Emulation Settings**

Baud rate	1200, 2400, 4800, 9600, 19,200, 38,400, or 57,600 (9600 is the default)
Parity	None
Data bits	8
Stop bits	1
Handshaking	None
Terminal emulation	VT100
Duplex	Full
Software flow control (XON/XOFF)	Off
Hardware flow control (RTS/CTS)	Off
Line wrap	Off
Screen scroll	On
CR translation	CR
Backspace (BS) translation	Destructive
Break length (milliseconds)	350
Enquiry (ENQ)	Off
EGA/VGA true underline	Off
Terminal width	890
ANSI 7- or 8-bit commands	7

If you are using the Microsoft Windows terminal emulation, disable the "Use Function, Arrow, and Ctrl Keys for Windows" option, located in the Terminal Preferences menu under Settings.

Step 3 Connect the EIA 232 port on the Catalyst 2600 to your PC or DTE device using a null-modem cable or straight-through cable and null-modem adapter. The Catalyst 2600 has a 9-pin male connector. For pin-out and cable information, refer to the appendix "Cable and Pin Information".

Step 4 Plug in the Catalyst 2600 if you have not already done so, or press the Reset button. The Catalyst 2600 does not have a power switch; the Catalyst 2600 is powered on when you plug in the power cord. The Catalyst 2600 will then perform a series of self-test diagnostics, which last about 4 minutes. (For more information about these diagnostic tests, refer to the section "Resetting the Catalyst 2600 and Running Diagnostic Tests.")

> **Note**   When you press the Reset button, the memory and tables (including address tables) of the Catalyst 2600 are cleared. However, pressing the Reset button does not clear the user-set configuration parameters; those values stored in nonvolatile random-access memory (NVRAM).

Step 5   When diagnostics are complete, continue with the steps under "Using the Console Panels."

Connecting a Modem to Allow Remote Terminal Access

You can monitor the Catalyst 2600 remotely by using a connection established through any Hayes-compatible modem. To connect a modem to the Catalyst 2600, perform the following steps:

Step 1   Set up your modem according to its instructions.

Step 2   Connect the cable from the EIA 232 port on the modem to the EIA 232 port on the Catalyst 2600.

Step 3   Set the modem as follows:

Echo	**Off**
Result codes	**Off**
Wait for connection	**45 seconds**
Pause between calls	**6 seconds**
Drop DTR between calls	**Yes**
Send CR between calls	**Yes**
Auto baud detect	On
Send init if CD high	Yes
Maximum dial attempts	999

> **Caution**   Some modems use slightly different names for the options. It is important that your modem be configured correctly. The settings shown in bold are particularly important. If your modem is not configured correctly, the connection may cause the Catalyst 2600 to reset.

Step 4   Begin running your terminal emulation software on the PC or other DTE to which you will be connecting the Catalyst 2600.

Step 5   Set the terminal using the emulation parameters listed in Table 4-1.

Step 6   Dial in to the Catalyst 2600 modem from your remote site.

Step 7   Continue with "Using the Console Panels."

Troubleshooting the Serial Link Connection

There are three types of communications problems that you might encounter: no communication, corrupted communication, and dropped characters. This section suggests steps to resolve such problems. In some cases, you are instructed to alter the configuration of the connection at the terminal or at the Catalyst 2600. For information about altering the configuration of your terminal emulator, refer to the documentation that accompanied your emulation program. For information about altering the configuration of the connection at the Catalyst 2600, refer to the section "Customizing the Console Session."

No Communication

If no communication is established:

Step 1   Check the cables and physical connections. Ensure that you are using the proper cable and adapter.

Step 2   Check the handshaking configuration at the terminal and the Catalyst 2600. Handshaking at the Catalyst 2600 is controlled by the Hardware Flow Control field on the Serial Link Configuration panel. Refer to the section "Customizing the Serial Link" for more information.

Caution   Hardware handshaking must be turned on at the Catalyst 2600 and at the terminal. You must also be using a 7-wire or 9-wire cable to the terminal. If hardware handshaking is off and you are using a 3-wire cable, a catastrophic failure of the Catalyst 2600 can occur.

Step 3   If the Catalyst 2600 has just been installed and is not yet in use, reset the Catalyst 2600. Resetting the Catalyst 2600 while it is in use will disrupt your network.

Step 4   If the problem continues, contact the Cisco Technical Assistance Center (TAC).

Corrupted Communication

If communication is established but the data displayed is corrupted:

Step 1   Ensure that the baud rate set at the Catalyst 2600 and at the terminal match.

Step 2   Verify the configuration of the terminal emulation, specifically:

- Parity—None
- Data Bits—8
- Stop Bits—1

Step 3   If the Catalyst 2600 has just been installed and is not yet in use, reset the Catalyst 2600.

Caution   Resetting the Catalyst 2600 while it is in use will disrupt your network.

Step 4   If the problem continues, contact the Cisco Technical Assistance Center (TAC).

Dropped Characters

If communication is established but some of the characters appear to be dropped or lost:

Step 1 Reduce the baud rate configured at the Catalyst 2600. We suggest using a baud rate of 9600.

Step 2 Enable the software handshaking feature. Handshaking at the Catalyst 2600 is controlled by the Software Flow Control field on the Serial Link Configuration panel. Refer to the section "Customizing the Serial Link" for more information.

Caution Hardware handshaking must be turned on at the Catalyst 2600 and at the terminal. You must also be using a 7-wire or 9-wire cable to the terminal. If hardware handshaking is off and you are using a 3-wire cable, a catastrophic failure of the Catalyst 2600 can occur.

Step 3 If the problem continues, contact the Cisco Technical Assistance Center (TAC).

Using a Telnet Session

As an alternative to a serial link connection, you can use a Telnet session to access the Catalyst 2600 console panels. Using a Telnet session to configure, monitor, and manage the Catalyst 2600 can be more convenient. There are some limitations, however, that you might encounter if using a Telnet session to access the console panels. These limitations are also discussed in this section.

Starting the Telnet Session

To establish a Telnet session to the Catalyst 2600:

Step 1 On the IP Configuration panel, the IP State must be set to "BootP When Needed" or "BootP Always."

Step 2 Configure your Telnet client to use a VT100/VT220 compatible setup.

Step 3 Telnet to the Catalyst 2600 using its assigned IP address. For information about assigning an IP address to the Catalyst 2600, see "Configuring IP Information" in "Configuring the Catalyst 2600."

Step 4 Continue the Telnet session with "Using the Console Panels."

Stopping the Telnet Session

To terminate the Telnet session, press Ctrl-B, or use the method provided by the Telnet application.

Troubleshooting a Telnet Session

If you experience difficulty opening a Telnet session with the Catalyst 2600, verify the settings for your Telnet client. Ensure that the terminal type is set to VT100, VT102, or VT220.

Limitations of Telnet Sessions

If you choose to use a Telnet session to access the console panels of the Catalyst 2600, you should be aware of the following limitations:

- Not all parameters can be altered from a Telnet session.

- There is a risk of involuntary termination of the Telnet session.

If you attempt to access a console panel that is already accessed by another telnet or serial link session, "Console is currently in use" is displayed.

Parameter Limitations

If you are using Telnet to access the console panels, be aware that:

- On the Telnet Configuration panel, you cannot change the values for the fields "Number of Telnet Sessions Allowed" or "Disallow New Telnet Sessions", or select the option **Terminate All Active Telnet Sessions.**

- You cannot select **Serial Link Configuration** on the Console Configuration panel.

- You cannot select **Close_Session** on the Telnet Sessions panel.

- There may be conflicts between Telnet sessions. If a Telnet session is disrupted, the user's configuration changes might not have been completed. In some menus, changes take effect immediately, as in adding filters, and in other menus, such as Spanning Tree Parameters, the changes are not saved until the menu is exited.

Involuntary Termination of the Telnet Session

A Telnet session can be terminated involuntarily from the console or as a result of certain configuration changes.

When the console is idle and Telnet is active, a user at the console can terminate the Telnet session without warning (refer to the section "Customizing and Managing the Telnet Sessions"). When the Telnet sessions ends, the Telnet session panel displays the message: "Your session has been terminated due to system maintenance work."

The Telnet session also ends if a user changes any of the following:

- Domain assignments for the ports

- Spanning-tree parameters

- IP address

- Default gateway

- Subnet mask

- IP state

- TokenChannel

Using the Console Panels

After you have established a connection to the Catalyst 2600 via either a serial link or a Telnet session, the Copyright Panel (Figure 4-1) is displayed.

Figure 4-1   Copyright Panel
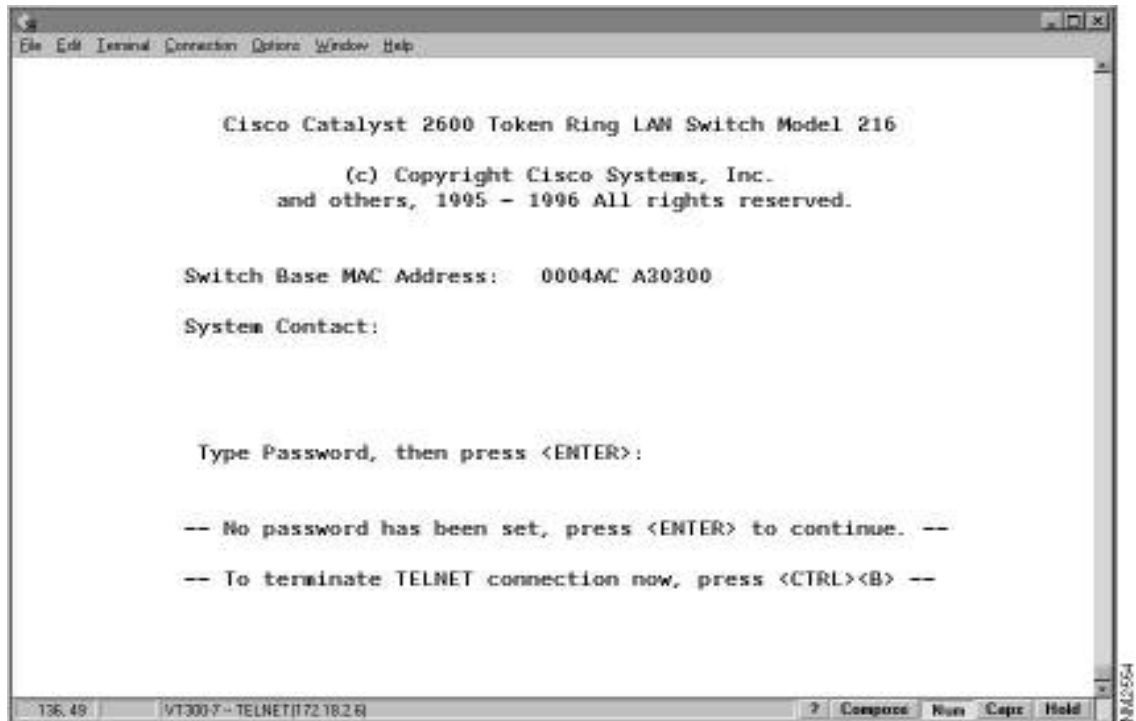
To access the console panels:

Step 1   Type the password, if one has been configured. The default is that no password is set.

Note   If you have forgotten your password, press the System Request button to access the System Request menu, and then Clear NVRAM. This will clear the password, but will also reset all configuration parameters to their default value, clearing any values you have entered.

Step 2   Press ENTER to advance to the Main Menu (Figure 4-2).

Figure 4-2   Main Menu Panel
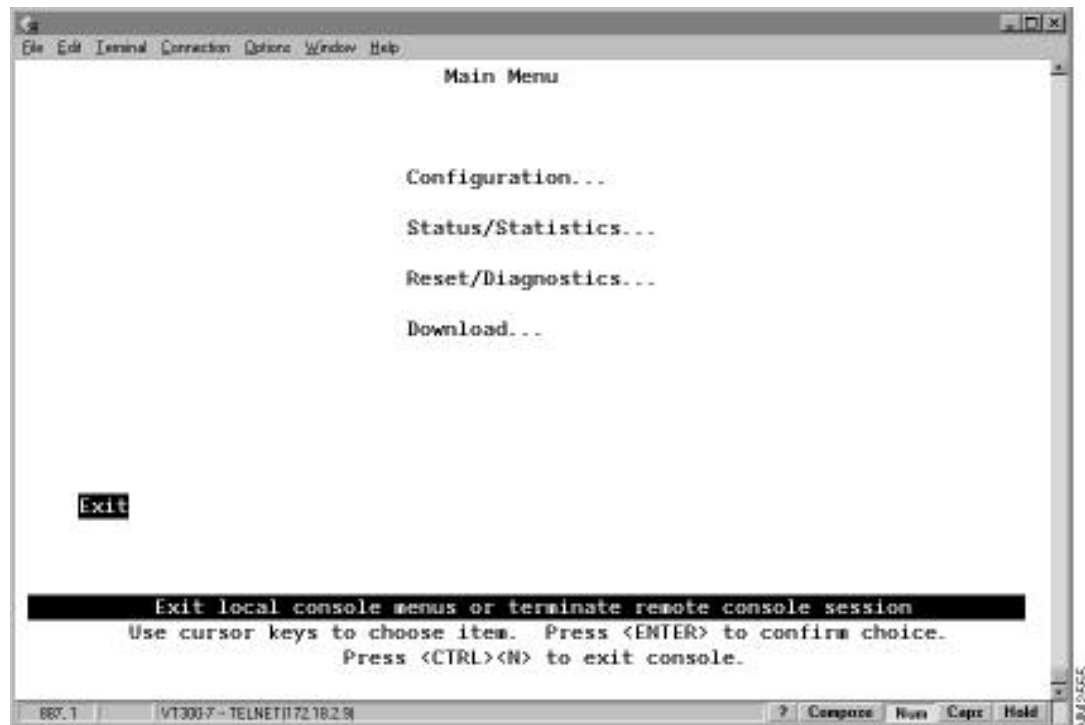
Step 3 Use your cursor to move to the item of your choice and press ENTER.

From this menu you can:

- Customize the configuration of the Catalyst 2600 (**Configuration**).

- Monitor the Catalyst 2600 (**Status/Statistics**).

- Troubleshoot the Catalyst 2600 (**Reset/Diagnostics**).

- Update the Catalyst 2600 microcode (**Download)**.

Guidelines for Using the Console Panels

As you move through the console panels, follow these guidelines:

- To select a menu or action item, move the cursor to the item and press ENTER. You can use the directional arrow keys or the Tab key to move the cursor. If you are using a remote connection through a modem at less than 9600 baud, we recommend you use the Tab key to move the cursor.

- In general:

  — To make changes to a parameter, move the cursor to the parameter name and press ENTER. You will then be prompted to enter the new data or select from a list of valid choices.

  — To make changes to a list entry, select **Change** and specify the entry identifier (index number). You will then be prompted to enter the new data or select from a list of valid choices. Some list entries consist of multiple parameters. To retain the current value of any parameter, enter a null value at the prompt.

- To save in NVRAM any changes made to the configuration panels, you must select **Return.**

- To return to the main menu, press CTRL-N. Changes made to the current panel will not be saved.

- To refresh the console panel at any time, press CTRL-L.

- In some cases, more information is available than can be displayed on the panel. To scroll to the next panel of information, select **More**.

Where to Find More Information

The panels associated with each Main Menu selection are described in the following chapters:

Menu	Panel	Chapter (Topic)
Configuration	Switch Information	Configuring the Catalyst 2600 (Configuring Basic Switch Parameters)
	Domain Configuration	Configuring the Catalyst 2600 (Configuring Multiple Domains)
	IP Configuration	Configuring the Catalyst 2600 (Configuring IP Information)
	SNMP Configuration	Managing Your Catalyst 2600 (Configuring SNMP Parameters)
	Spanning Tree	Configuring the Catalyst 2600 (Configuring Spanning-Tree Parameters)
	Port Configuration	Configuring the Catalyst 2600 (Configuring Port Parameters)
	Switched Port Analyzer Configuration	Managing Your Catalyst 2600 (Monitoring Port Traffic)
	TokenChannel Configuration	Configuring the Catalyst 2600 (Configuring TokenChannels)
	MAC Filter & Port Security	Establishing Security for the Catalyst 2600 (Limiting Scope and Access)
	Address Aging	Configuring the Catalyst 2600 (Configuring Address Aging)
	Switching Mode Threshold	Configuring the Catalyst 2600 (Configuring Switching Mode Thresholds)
	Password	Establishing Security for the Catalyst 2600 (Setting a Password)
	Console Configuration	Planning for Configuration and Management (Customizing the Console Session)
	Source Route Configuration	Configuring the Catalyst 2600 (Configuring Source-Route Parameters)
Status/Statistics	All panels	Managing Your Catalyst 2600 (Viewing Status and Statistic Information)
Reset/Diagnostics	All panels	Configuring the Catalyst 2600 (Resetting the Catalyst 2600 and Running Diagnostic Tests)
Download	Serial Link Download	Updating the Catalyst 2600 Software (Downloading via a Serial Link)
	TFTP Download	Updating the Catalyst 2600 Software (Downloading via TFTP)

Customizing the Console Session

To customize your console session, select **Configuration>Console Configuration.** The Console Configuration panel (Figure 4-3) is displayed.

Figure 4-3   Console Configuration Panel
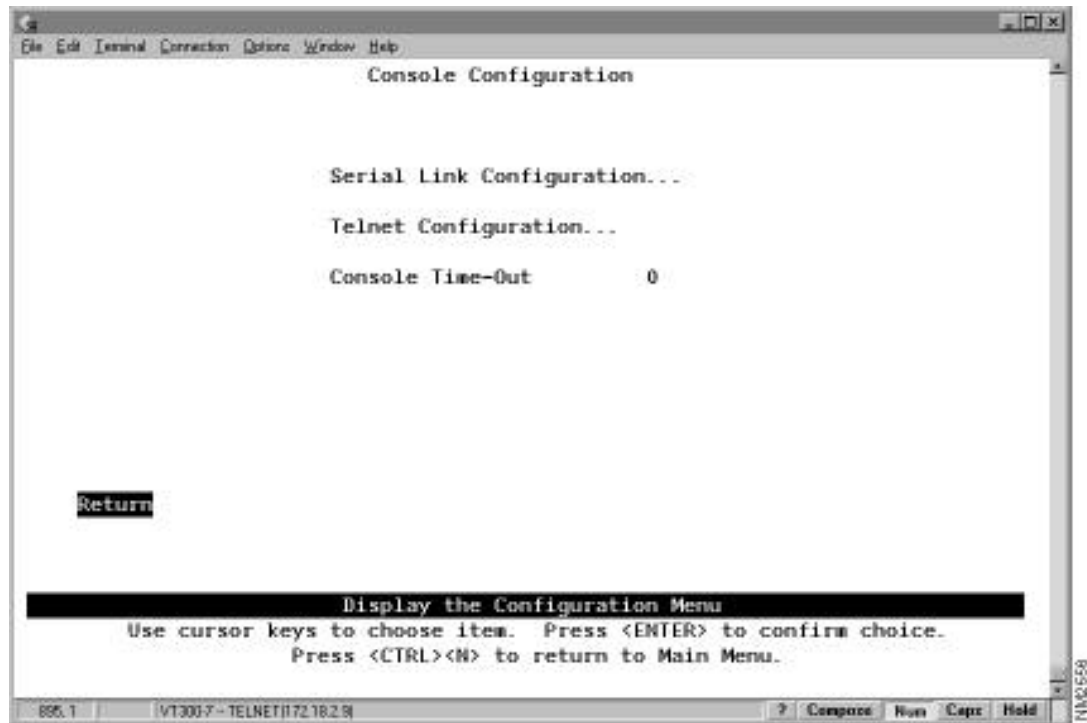
The following information is displayed on this panel:

- Console Time-Out—The time, in minutes, that the console session can remain inactive before it times out. Unsaved entries are lost when the console times out. Valid values are 0 through 1440. The default is 0, which means that the console session will not time out.

To	Select	Then
Change the console time-out	**Console Time-Out**	Specify the new value.
Specify parameters for a console session via a serial link	**Serial Link Configuration**	Refer to "Customizing the Serial Link."
Specify parameters for a console session via Telnet	**Telnet Configuration**	Refer to "Customizing and Managing the Telnet Sessions."
Save your changes	**Return**	

Note   You cannot select Serial Link Configuration if you are accessing the configuration program via Telnet.

Customizing the Serial Link

To view and change the parameters for a serial link console session, select **Serial link Configuration** on the Console Configuration panel. The Serial Link Configuration panel is displayed.

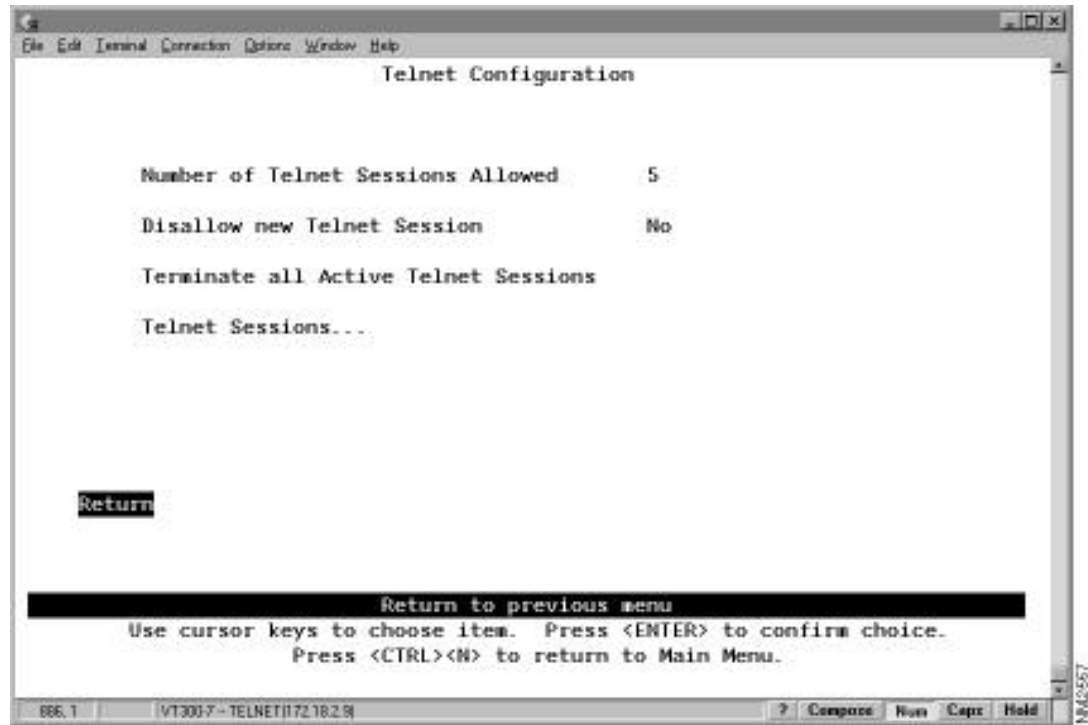The following information is displayed on this panel:

- Hardware Flow Control—Indicates whether RTS/CTS (request to send/clear to send) handshaking is enabled. The default is "Disabled".

- Software Flow Control—Indicates whether the use of XON and XOFF characters is enabled. The default is "Disabled".

- Autobaud Upon Break—Indicates whether the baud rate is reset when a Break key sequence (pressing ENTER rapidly for five seconds) is sent or received. The default is "Disabled". When set to enabled, a baud rate change can be accomplished by changing the baud rate of the terminal emulator, disconnecting and reconnecting the EIA 232 cable, and then pressing Enter until a panel appears.

- Console Baud Rate—The baud rate of the EIA 232 port. Acceptable baud rates for the console are 1200, 2400, 4800, 9600, 19200, 38400, 57600, or Autobaud. The default value for this parameter is 9600. Make sure that your terminal emulator baud rate matches the console baud rate you set.

To	Select	Then
Change the current settings...	The appropriate parameter...	Specify the new value.
Save your changes...	**Return**	

Customizing and Managing the Telnet Sessions

To view and change the parameters for a Telnet console session, select **Telnet Configuration** on the Console Configuration panel. The Telnet Configuration panel (Figure 4-4) is displayed.

Figure 4-4   Telnet Configuration Panel

The following information is displayed on this panel:

- Number of Telnet Sessions Allowed—The maximum number of Telnet sessions allowed. Valid values are 1 through 5. The default is 5.

- Disallow New Telnet Sessions—Indicates whether new Telnet sessions should not be allowed. The default is "No"; new Telnet sessions are allowed.

To	Select	Then
Change the current settings...	The appropriate parameter...	Specify the new value.
Stop all active Telnet sessions...	**Terminate All Active Telnet Sessions**	
Display information about a specific Telnet session...	**Telnet Sessions**	Refer to "Managing Individual Telnet Sessions."
Save your changes...	**Return**	

Note   You cannot select Number of Telnet Sessions Allowed, Disallow New Telnet Sessions, or Terminate All Active Telnet Sessions if you are accessing the configuration program via Telnet.

Managing Individual Telnet Sessions

To display information about or close any active Telnet session, select **Telnet Sessions** from the Telnet Configuration panel. The Telnet Sessions panel (Figure 4-5) is displayed.

Figure 4-5   Telnet Sessions Panel
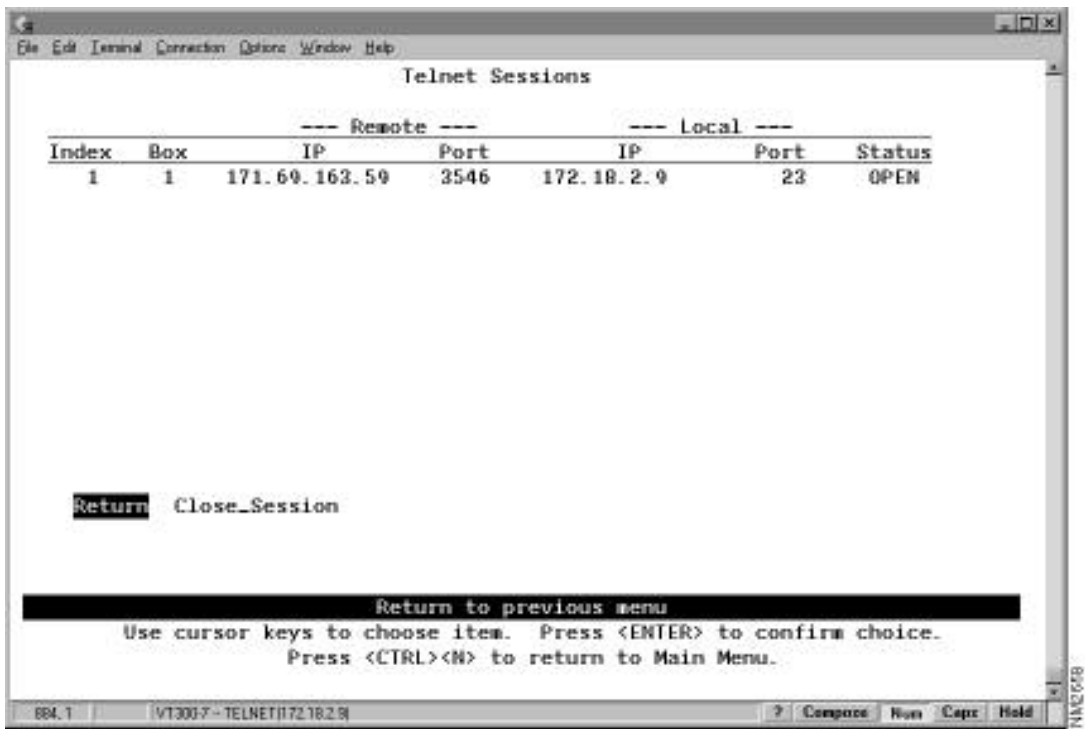
The following information is displayed on this panel:

- Index—The identifier for the Telnet session.

- Box—The identifier of the Catalyst 2600 in the stack (reserved for future use).

- Remote IP—The IP address of the Telnet client.

- Remote Port—The TCP services port being used at the Telnet client.

- Local IP—The IP address assigned to the Catalyst 2600.

- Local Port—The TCP services port being used at the Catalyst 2600. This is always the well-known Telnet port, port 23.

- Status—The status of the Telnet session. Possible values are:

  — OPEN—connection is active.

  — CLOSING—connection is going down.

  — EXIT—connection is closed.

To	Select	Then
Stop a specific Telnet session...	**Close_Session**	Specify the index number of the session to close
Save your changes...	**Return**	

Note   You cannot select **Close_Session** if you are accessing the configuration program via Telnet.