

Configuring Telnet

This chapter describes how to configure access server and router lines to support Telnet connections. For a complete description of commands in this chapter, see the *Access Services Command Reference*. Making Telnet connections is described in the “Making Connections to Network Devices” chapter in this publication.

Cisco’s Implementation of Telnet

The Internet Protocol (IP) suite includes the Telnet protocol. Telnet allows a user at one site to establish a TCP connection to a login server at another site, then passes the keystrokes from one system to the other. Telnet can accept either an IP address or a domain name as the remote system address. In short, Telnet offers three main services:

- Network virtual terminal connection
- Option negotiation
- Symmetric connection

The Cisco Systems implementation of Telnet supports the following Telnet options:

- Remote Echo
- Binary Transmission
- Suppress Go Ahead
- Timing Mark
- Terminal Type
- Send Location
- Terminal Speed
- Remote Flow Control
- X Display Location

Telnet Configuration Task Overview

The following sections describe the tasks for configuring Telnet:

- Set the Line to Negotiate Speed
- Set the Line to Refuse Full Duplex, Remote Echo Connections
- Set End-of-Line Control

- Synchronize the Break Signal
- Generate a Hardware Break Signal
- Optimize Response to User Interrupt Characters
- Assign an IP Address to a Service
- Define Telnet Connection Failure and Success Messages
- Set Pending Output Notification
- Refuse a Connection

Set the Line to Negotiate Speed

You can set the line speed to match line speeds on remote systems in reverse Telnet, host machines hooked to an access server or router to access the network, or a group of console lines hooked up to the access server or router when disparate line speeds are in use at the local and remote ends of the connection. Line speed negotiation adheres to the Remote Flow Control option, defined in RFC 1080. Perform the following task in line configuration mode:

Task	Command
Negotiate speeds on reverse Telnet lines.	telnet speed <i>default-speed maximum-speed</i>

Set the Line to Refuse Full Duplex, Remote Echo Connections

You can set the line to allow the Cisco IOS software to refuse full duplex, remote echo connection requests from the other end. This task suppresses negotiation of the Telnet Remote Echo and Suppress Go Ahead options. Perform the following task in line configuration mode:

Task	Command
Cause Telnet to refuse to negotiate full duplex, remote echo requests on incoming connections.	telnet refuse-negotiations

Set End-of-Line Control

You can configure the line to cause the Cisco IOS software to send a RETURN (CR) as a CR followed by a NULL instead of a CR followed by a LINE FEED (LF). This is useful for coping with different interpretations of end-of-line handling in the Telnet protocol specification. Perform the following task in line configuration mode:

Task	Command
Set line to send a RETURN (CR) as a CR followed by a NULL instead of a CR followed by a LINE FEED (LF).	telnet transparent

Synchronize the Break Signal

You can set the line to cause a reverse Telnet line to send a Telnet Synchronize signal when it receives a Telnet Break signal. The Telnet Synchronize signal clears the data path, but still interprets incoming commands. Perform the following task in line configuration mode:

Task	Command
Set line to send a Telnet Synchronize signal when it receives a Telnet Break signal.	telnet sync-on-break

Generate a Hardware Break Signal

You can set the line to cause the system to generate a hardware Break signal on the RS-232 line that is associated with a reverse Telnet connection, when a Telnet Interrupt-Process command is received on that connection. This can be used to control the translation of Telnet Interrupt-Process commands into X.25 Break indications, and to work around the following situations:

- Several user Telnet programs send a Telnet Interrupt-Process command, but cannot send a Telnet Break signal.
- Some Telnet programs implement a Break signal that sends a Telnet Interrupt-Process command.
- Some RS-232 hardware devices use a hardware Break signal for various purposes.

To set a line to generate a hardware Break signal, perform the following task in line configuration mode:

Task	Command
Set the line to cause the system to generate a hardware Break signal on the RS-232 line that is associated with a reverse Telnet connection.	telnet break-on-ip

Optimize Response to User Interrupt Characters

When used with a correctly operating host, Cisco IOS software implements the Telnet Synchronize and Abort Output signals, which can stop output within one packet's worth of data from the time the user types the interrupt character. You can configure a faster response to user interrupt characters. Perform the following global configuration task:

Task	Command
Optimize the line by setting the number of characters output before the interrupt executes.	ip tcp chunk-size <i>number</i>

Changing the number of characters output, or chunk size, affects neither the size of the packet used nor the TCP window size, either of which would cause serious efficiency problems for the remote host as well as for the access server or router. Instead, the Telnet status is checked after the number of characters specified, causing only a relatively minor performance loss.

Assign an IP Address to a Service

You can configure connections to an IP address to act identically to connections made to the server's primary IP address on the TCP port. A user trying to connect is connected to the first free line in a rotary group using the Telnet protocol. Perform the following task in interface configuration mode:

Task	Command
Assign an IP address to the service provided on a TCP port.	ip alias <i>ip-address tcp-port</i>

Define Telnet Connection Failure and Success Messages

You can define a message that is displayed when a successful Telnet or rlogin connection to a specified host fails or succeeds. To do so, perform one or both of the following tasks in global configuration mode:

Task	Command
Define a message that the router displays whenever an attempt to connect to the specified host fails.	busy-message <i>hostname d message d</i>
Define a message that the router displays whenever an attempt to connect to the specified host succeeds.	login-string <i>hostname d message [%secp] [%secw] [%b] d</i>

With the **login-string** options, you can set a pause, prevent a user from issuing commands during a pause, send a Break character, and use a percent sign (%) in the login string.

This task is only useful with two-step protocol translation sessions. For more information about protocol translation, refer to the "Configuring Protocol Translation" chapter.

Set Pending Output Notification

You can set up a line to inform a user who has multiple, concurrent Telnet connections when output is pending on a connection other than the current one. To do so, perform the following task in line configuration mode:

Task	Command
Set up a line to notify a user of pending output.	notify

Refuse a Connection

To define a "line-in-use" message to indicate that the line is currently busy, performing the following task in line configuration mode:

Task	Command
Define a "line-in-use" message.	refuse-message <i>d message d</i>