

Terminal Characteristics Commands for Dial Sessions

This chapter describes the commands for setting operating characteristics for remote terminal service connections. It also describes the commands used to monitor and manage these connections.

Configuring support for terminal service connections means to enable network devices running the same protocol, such as local-area transport (LAT) or Transmission Control Protocol (TCP), to connect across a LAN or WAN through network and terminal-emulation software such as Telnet, rlogin, TN3270, LAT, and NetWare Access Server Interface (NASI).

The following terminal connections can be performed by configuring terminal operating characteristic using the Cisco IOS software:

- Terminal services permit asynchronous devices to be connected to a LAN or WAN through network and terminal-emulation software including Telnet, rlogin, NASI, Digital's LAT protocol, and IBM TN3270.
- Access services permit terminals to connect with remote hosts using virtual terminal protocols including Telnet, NASI, LAT, TN3270, rlogin, and X.25 packet assembler/disassembler (PAD). You can use a router that supports access services to function as a terminal server to provide terminal access to devices on the network.
- A host can also connect directly to an access server. In IBM environments, TN3270 allows a standard ASCII terminal to emulate a 3278 terminal and access an IBM host across an IP network.
- In Digital environments, LAT support provides a terminal with connections to VMS hosts. X.25 PAD allows terminals to connect directly to an X.25 host over an X.25 network through the router. X.25 PAD eliminates the need for a separate PAD device. This connection requires use of one of the synchronous serial interfaces on the router supporting access services.

Note For configuration tasks and examples, refer to the chapter “Configuring Terminal Operating Characteristics for Dial-In Sessions” in the *Dial Solutions Configuration Guide*.

absolute-timeout

To set the interval for closing the connection, use the **absolute-timeout** line configuration command. Use the **no** form of this command to restore the default.

absolute-timeout *minutes*
no absolute-timeout

Syntax Description

<i>minutes</i>	The number of minutes after which the user's session will be terminated.
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Default

No timeout interval is automatically set.

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 11.0.

This command terminates the connection after the specified time period has elapsed, regardless of whether the connection is being used at the time of termination. You can specify an absolute-timeout value for each port. The user is given 20 seconds notice before the session is terminated. You can use this command in conjunction with the **logout-warning** command, which notifies the user of an impending logout.

Note You can set this command and an AppleTalk Remote Access Protocol (ARAP) timeout for the same line; however, this command supersedes any timeouts set in ARAP. Additionally, ARAP users will receive no notice of any impending termination if you use this command.

Example

The following example sets an interval of 60 minutes on line 5:

```
line 5
 absolute-timeout 60
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

logout-warning
session-timeout

editing

To enable enhanced editing mode for a particular line, use the **editing** line configuration command. Use the **no** form of this command to disable the enhanced editing mode.

editing
no editing

Syntax Description

This command has no arguments or keywords.

Default

Enabled

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Table 30 provides a description of the keys used to enter and edit commands. “Ctrl” indicates the Control key. It must be pressed simultaneously with its associated letter key. “Esc” indicates the Escape key. It must be pressed first, followed by its associated letter key. Keys are *not* case sensitive.

Table 30 Editing Keys and Functions for Software Release 9.21 and Later

Keys	Function
Tab	Completes a partial command name entry. When you enter a unique set of characters and press the Tab key, the system completes the command name. If you enter a set of characters that could indicate more than one command, the system beeps to indicate an error. Enter a question mark (?) immediately following the partial command (no space). The system provides a list of commands that begin with that string.
Delete or Backspace	Erases the character to the left of the cursor.
Return	At the command line, pressing the Return key performs the function of processing a command. At the “---More---” prompt on a terminal screen, pressing the Return key scrolls down a line.
Space Bar	Allows you to see more output on the terminal screen. Press the space bar when you see the line “---More---” on the screen to display the next screen.
Left arrow ¹	Moves the cursor one character to the left. When you enter a command that extends beyond a single line, you can press the Left Arrow key repeatedly to scroll back toward the system prompt and verify the beginning of the command entry.
Right arrow ¹	Moves the cursor one character to the right.
Up arrow ¹ or Ctrl-P	Recalls commands in the history buffer, beginning with the most recent command. Repeat the key sequence to recall successively older commands.

Table 30 Editing Keys and Functions for Software Release 9.21 and Later (continued)

Keys	Function
Down arrow ¹ or Ctrl-N	Return to more recent commands in the history buffer after recalling commands with the Up Arrow or Ctrl-P. Repeat the key sequence to recall successively more recent commands.
Ctrl-A	Moves the cursor to the beginning of the line.
Ctrl-B	Moves the cursor back one character.
Ctrl-D	Deletes the character at the cursor.
Ctrl-E	Moves the cursor to the end of the command line.
Ctrl-F	Moves the cursor forward one character.
Ctrl-K	Deletes all characters from the cursor to the end of the command line.
Ctrl-L and Ctrl-R	Redisplays the system prompt and command line.
Ctrl-T	Transposes the character to the left of the cursor with the character located at the cursor.
Ctrl-U and Ctrl-X	Deletes all characters from the cursor back to the beginning of the command line.
Ctrl-V and Esc Q	Inserts a code to indicate to the system that the keystroke immediately following should be treated as a command entry, <i>not</i> as an editing key.
Ctrl-W	Deletes the word to the left of the cursor.
Ctrl-Y	Recalls the most recent entry in the delete buffer. The delete buffer contains the last ten items you have deleted or cut. Ctrl-Y can be used in conjunction with Esc Y.
Ctrl-Z	Ends configuration mode and returns you to the EXEC prompt.
Esc B	Moves the cursor back one word.
Esc C	Capitalizes the word at the cursor.
Esc D	Deletes from the cursor to the end of the word.
Esc F	Moves the cursor forward one word.
Esc L	Changes the word at the cursor to lowercase.
Esc U	Capitalizes from the cursor to the end of the word.
Esc Y	Recalls the next buffer entry. The buffer contains the last ten items you have deleted. Press Ctrl-Y first to recall the most recent entry. Then press Esc Y up to nine times to recall the remaining entries in the buffer. If you bypass an entry, continue to press Esc Y to cycle back to it.

¹ The arrow keys function only with ANSI-compatible terminals.

Example

The following example disables enhanced editing mode on virtual terminal line 3:

```
line vty 3
no editing
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

terminal editing

login (line)

To enable password checking at login, use the **login** line configuration command. Use the **no** form of this command to disable password checking and allow connections without a password.

login [**local** | **tacacs**]
no login

Syntax Description

local	(Optional) Selects local password checking. Authentication is based on the username specified with the username global configuration command.
tacacs	(Optional) Selects the Terminal Access Controller Access Control System (TACACS)-style user ID and password-checking mechanism.

Default

Virtual terminals require a password. If you do not set a password for a virtual terminal, it responds to attempted connections by displaying an error message and closing the connection.

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

If you specify the **login** command without the **local** or **tacacs** option, authentication is based on the password specified with the **password** line configuration command.

Note This command cannot be used with authentication, authorization, and accounting (AAA)/TACACS+. Use the **login authentication** command instead.

Examples

The following example sets the password letmein on virtual terminal line 4:

```
line vty 4
password letmein
login
```

The following example enables the TACACS-style user ID and password-checking mechanism:

```
line 0
password mypassword
login tacacs
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

enable password
password
username

login authentication

To enable AAA authentication for logins, use the **login authentication** line configuration command. Use the **no** form of the command to return to the default.

```
login authentication { default | list-name | dialin }
no login authentication [default | list-name | dialin]
```

Syntax Description

default	Uses the default list created with the aaa authentication login command.
<i>list-name</i>	Use an authentication list with this name.
dialin	Enable authentication across all asynchronous modem logins.

Default

Login authentication uses the default set with the **aaa authentication login** command. If no default is set, the local user database is checked. No authentication is performed on the console.

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

This command is a per-line command used with AAA authentication and specifies a list of authentication processes that are tried at login. If no list is specified, the default list is used (whether or not it is specified in the command line). Defaults and lists are created with the **aaa authentication login** command. Note that entering the **no** version of **login authentication** has the same effect as entering the command with the **default** argument.

Before issuing this command, create a list of authentication processes with the **aaa authentication login** global configuration command.



Caution If you use a *list-name* that has not been configured with the **aaa authentication login** command, you will disable logins on this line.

Examples

The following example specifies that the default AAA authentication is to be used on line 4:

```
line 4
 login authentication default
```

The following example specifies that the AAA authentication list called MIS-access is to be used on line 7:

```
line 7
 login authentication MIS-access
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

aaa authentication login

password

To specify a password on a line, use the **password** line configuration command. Use the **no** form of this command to remove the password.

```
password password  
no password
```

Syntax Description

<i>password</i>	Character string that specifies the line password. The first character cannot be a number. The string can contain any alphanumeric characters, including spaces, up to 80 characters. You cannot specify the <i>password</i> in the format <i>number-space-anything</i> . The space after the number causes problems. For example, <i>hello 21</i> is a legal password, but <i>21 hello</i> is not. The password checking is case sensitive. For example, the password <i>Secret</i> is different than the password <i>secret</i> .
-----------------	---

Default

No password is specified.

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

When an EXEC process is started on a line with password protection, the EXEC prompts for the password. If the user enters the correct password, the EXEC prints its normal privileged prompt. The user can try three times to enter a password before the EXEC exits and returns the terminal to the idle state.

Example

The following example removes the password from virtual terminal lines 1 to 4:

```
line vty 1 4  
no password
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

```
enable password  
login (line)
```

rxspeed

To set the terminal receive speed (how fast the terminal receives information from the modem), use the **rxspeed** line configuration command.

rxspeed *bps*

Syntax Description

bps Baud rate in bits per second (bps).

Default

9600 bps

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Set the speed to match the baud rate of whatever device you have connected to the port. Some baud rates available on devices connected to the port might not be supported on the system. The system will indicate if the speed you select is not supported.

Note If the line was previously configured for automatic baud rate detection (autobaud), disable autobaud by entering the **no autobaud** command before entering the **rxspeed** command to fix the speed of the port.

Example

The following example sets the line 5 receive rate to 2400 bps:

```
line 5
rxspeed 2400
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

speed
terminal rxspeed
txspeed

session-limit

To set the maximum number of terminal sessions per line, use the **session-limit** line configuration command. Use the **no** form of this command to remove any specified session limit.

session-limit *session-number*
no session-limit

Syntax Description

session-number Specifies the maximum number of sessions.

Default

The default and set session limits are displayed with the **show terminal EXEC** command.

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Example

The following example limits the number of sessions to eight on a ten-line range:

```
line 2 12
 session-limit 8
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

line vty

session-timeout

To set the interval for closing the connection when there is no input or output traffic, use the **session-timeout** line configuration command. Use the **no** form of this command to remove the timeout definition.

```
session-timeout minutes [output]  
no session-timeout
```

Syntax Description

<i>minutes</i>	Specifies the timeout interval in minutes.
output	(Optional) Specifies that when traffic is sent to an asynchronous line from the router (within the specified interval), the connection is retained.

Default

The default interval is zero, indicating the router maintains the connection indefinitely.

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

This command sets the interval that the Cisco IOS software waits for traffic before closing the connection to a remote computer and returning the terminal to an idle state. If only **session timeout** is the specified command, the session timeout interval is based solely on detected input from the user. If **session-timeout output** is the specified command, the interval is based on input and output traffic. You can specify a session timeout on each port.

Examples

The following example sets an interval of 20 minutes and specifies that the timeout is subject to traffic detected from the user (input only):

```
line 5  
  session-timeout 20
```

The following example sets an interval of 10 minutes, subject to traffic on the line in either direction:

```
line 5  
  session-timeout 10 output
```

show terminal

To obtain information about the terminal configuration parameter settings for the current terminal line, use the **show terminal** EXEC command.

show terminal

Syntax Description

This command has no arguments or keywords.

Command Mode

EXEC

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Sample Display

The following is sample output from the **show terminal** command:

```
router# show terminal

Line 2, Location: "", Type: ""
Length: 24 lines, Width: 80 columns
Baud rate (TX/RX) is 9600/9600
Status: Ready, Active, No Exit Banner
Capabilities: Enabled
Modem state: Ready
Special Chars: Escape Hold Stop Start Disconnect Activation
                ^^x  none  -    -    none
Timeouts:      Idle EXEC  Idle Session  Modem Answer  Session  Dispatch
                never      never          0:00:15      not imp  not set
Session limit is not set.
Allowed transports are telnet rlogin. Preferred is telnet
No output characters are padded
```

Table 31 describes the fields in the first three lines of **show terminal** output.

Table 31 Show Terminal Field Descriptions—First Three Lines of Output

Field	Description
Line 2	Current terminal line.
Location: ""	Location of the current terminal line, as specified using the location line configuration command.
Type: ""	Type of the current terminal line, as specified using the line global configuration command.
Length: 24 lines	Length of the terminal display.
Width: 80 columns	Width of the terminal display, in character columns.
Baud rate (TX/RX) is 9600/9600	Transmit rate/receive rate of the line.

The following line of output indicates the status of the line:

```
Status: Ready, Active, No Exit Banner
```

Table 32 describes possible values for the Status field.

Table 32 Show Terminal Field Description—Status Field

Field	Description
Active	A process is actively using the line.
Autobauding	The line is running the autobaud process.
Carrier Dropped	Some sense of “carrier” has been dropped, so the line process should be killed.
Connected	The line has at least one active connection.
Dialing Out	A DDR asynchronous interface is dialing a remote site on this line.
Echo Off	The line is not echoing what the user types in (for example because a password must be entered).
Escape Started	The first character of the escape sequence has been typed.
Escape Typed	Both characters of the escape sequence have been typed.
Hanging Up	The line state is “hanging up.”
Hardware XON/XOFF	The line uses a UART that supports XON/XOFF flow control in hardware. (This does not mean that the line is currently using software flow control.)
Hold Typed	The user typed the “hold character” (and the line is paused).
Idle	The line modem state is “idle” (see modem state diagrams).
Idle Timeout	An idle timeout has occurred.
Input Stopped	The input has been turned off because of hardware flow control or overflow.
No Exit Banner	The normal exit banner will not be displayed on this line.
PSI Enabled	The line is paying attention to typed escape characters.
Rcvd BREAK	A BREAK sequence has been received on the line.
Rcvd Command	The line has received a special command sequence (for example, ^B for send break).
Rcvd CR	The last character received was a carriage return.
Ready	The line state is “ready.”
Ring Transition	A transition has occurred on the RING signal of the line.
Send Break Soon	You need to send a BREAK on the line soon.
Send XOFF Soon	Your buffers are full and you should send an XOFF soon.
Sending Break	You are in the process of sending a BREAK sequence on the line.
Sent XOFF	Your buffers were full, so we sent an XOFF.
SLIP Mode	The line is running SLIP or PPP.

The following line of output indicates the status of the capabilities of the line. These capabilities correspond closely to configurable parameters that can be set using configuration commands.

```
Capabilities: Enabled
```

Table 33 describes possible values for the Capabilities field.

Table 33 Show Terminal Field Descriptions—Capabilities Field

Field	Description
Autobaud Full Range	Corresponds to the autobaud command.
Character Padding	At least one pad c x configuration command has been used.
Enabled	The user has “enabled” successfully.
EXEC Suppressed	Corresponds to the no exec command.
Hangup on Last Close	Corresponds to the autohangup command.
Hardware Flowcontrol In	Corresponds to the flowcontrol hardware in command.
Hardware Flowcontrol Out	Corresponds to the flowcontrol hardware out command.
Insecure	Corresponds to the insecure command.
Lockable	Corresponds to the lockable command.
Modem Callin	Corresponds to the modem callin command.
Modem Callout	Corresponds to the modem callout command.
Modem CTS-Required	Corresponds to the modem cts-required command.
Modem DTR-Active	Corresponds to the modem dtr-active command.
Modem RI is CD	Corresponds to the modem ri-is-cd command.
No Login Banner	Corresponds to the no exec-banner command.
Notification Set	Corresponds to the notify command.
Output Non-Idle	Corresponds to the session-timeout command.
Permanent SLIP	Corresponds to the slip-dedicated command.
Private Line	Corresponds to the private command.
Refuse Suppress-GA	Corresponds to the telnet refuse command.
Receives Logging Output	Corresponds to the monitor command.
Refuse Telnet Echo	Corresponds to the telnet refuse command.
Send BREAK on IP	Corresponds to the telnet break-on-ip command.
SLIP allowed	Corresponds to the slip address command.
Software Flowcontrol In	Corresponds to the flowcontrol software in command.
Software Flowcontrol Out	Corresponds to the flowcontrol software out command.
Telnet Transparent Mode	Corresponds to the telnet transparent command.

The following line of output indicates the modem state. Possible values include Autobauding, Carrier Dropped, Hanging Up, Idle, and Ready.

```
Modem state: Ready
```

The following lines of output indicate the special characters that can be entered to activate various terminal operations. The none or hyphen (-) values imply that no special characters are set.

```
Special Chars: Escape Hold Stop Start Disconnect Activation
                ^^x  none  -    -    none
```

The following lines of output indicate the timeout values that have been configured for the line:

```
Timeouts:      Idle EXEC      Idle Session  Modem Answer  Session  Dispatch
              never          never          0:00:15      not imp  not set
```

Table 34 describes the fields in the preceding lines of output.

Table 34 Show Terminal Field Descriptions—Timeouts Fields

Field	Description
Idle EXEC	Interval that the EXEC command interpreter waits for user input before resuming the current connection; or if no connections exist, returning the terminal to the idle state and disconnecting the incoming session. This interval is set using the exec-timeout command.
Idle Session	Interval that the Cisco IOS software waits for traffic before closing the connection to a remote computer and returning the terminal to an idle state. This interval is set using the session-timeout command.
Modem Answer	Interval during which the software raises DTR in response to RING and the modem response to CTS. This interval is set using the modem answer-timeout command.
Session	Not implemented in this release.
Dispatch	Number of milliseconds the software waits after putting the first character into a packet buffer before sending the packet. This interval is set using the dispatch-timeout command.

The following lines of output indicate how various options have been configured:

```
Session limit is not set.
Allowed transports are telnet rlogin. Preferred is telnet
No output characters are padded
```

speed

To set the terminal baud rate, use the **speed** line configuration command. This command sets both the transmit (to terminal) and receive (from terminal) speeds.

speed *bps*

Syntax Description

bps Baud rate in bits per second (bps). The default is 9600 bps.

Default

9600 bps

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Set the speed to match the transmission rate of whatever device you have connected to the port. Some baud rates available on devices connected to the port might not be supported on the router. The router indicates whether the speed you selected is not supported.

Note If the line was previously configured for automatic baud rate detection (autobaud), disable autobaud by entering the **no autobaud** command before entering the **speed** command to fix the speed of the port.

Example

The following example sets lines 1 and 2 on a Cisco 2509 access server to 115200 bps:

```
line 1 2
speed 115200
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

rxspeed
terminal speed
txspeed

start-character

To set the flow control start character, use the **start-character** line configuration command. Use the **no** form of this command to remove the character.

start-character *ascii-number*
no start-character

Syntax Description

ascii-number Decimal representation of the start character.

Default

Decimal 17

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

This command defines the character that signals the start of data transmission when software flow control is in effect. See the “ASCII Character Set” appendix in the *Configuration Fundamentals Command Reference* for a list of ASCII characters.

Example

The following example changes the start character to Ctrl-B, which is decimal 2:

```
line 2
 start-character 2
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

flowcontrol
stop-character
terminal start-character

timeout absolute

To specify a timeout period that controls how long a session can be connected before it is terminated, use the **timeout absolute** interface configuration command. To remove the session timeout period, use the **no** form of this command.

timeout absolute *minutes* [*seconds*]

no timeout absolute

Syntax Description

<i>minutes</i>	Session lifetime in minutes, in the range from 0 to 35790 minutes.
<i>seconds</i>	(Optional) Session lifetime in seconds, in the range from 0 to 59 seconds.

Default

No default behavior or values.

Command Mode

Interface configuration

Usage Guidelines

This command was introduced in Cisco IOS Release 11.3.

Example

The following partial example shows how to impose a 15-minute (900-second) idle timeout and a 12-hour (720-minute) absolute timeout for session connections:

```
interface Serial0:23
  dialer idle-timeout 900
  timeout absolute 720
!
interface Serial1:23
  dialer idle-timeout 900
  timeout absolute 720
.
.
.
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

ppp idle timeout
dialer idle-timeout

transport input

To define which protocols to use to connect to a specific line of the router, use the **transport input** line configuration command.

transport input { **all** | **lat** | **mop** | **nasi** | **none** | **pad** | **rlogin** | **ssh** | **telnet** | **v120** }

Syntax Description

all	Selects all protocols.
lat	Selects the Digital LAT protocol and specifies both incoming reverse LAT and host-initiated connections.
mop	Selects Maintenance Operation Protocol (MOP).
nasi	Select NetWare Access Servers Interface (NASI) as the input transport protocol.
none	Prevents any protocol selection on the line. This makes the port unusable by incoming connections.
pad	Selects X.3 PAD incoming connections.
rlogin	Selects the UNIX rlogin protocol.
ssh	Selects the Secure Shell (SSH) protocol.
telnet	Specifies all types of incoming TCP/IP connections.
v120	Select the V.120 protocol for incoming async over ISDN connections.

Default

No protocols allowed on the line (**none**).

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0. The **lat**, **pad**, **all**, and **v120** keywords first appeared in Cisco IOS Release 11.1. The **none** option became the default in Cisco IOS Release 11.1. Originally, the default was **all** and this keyword restores pre-Cisco IOS Release 11.1 defaults.



Caution Copy this entire text line and anchored frame marker and paste it on the body page. Cisco routers do not accept incoming network connections to asynchronous ports (TTY lines) by default. You have to specify an incoming transport protocol, or specify **transport input all** before the line will accept incoming connections. For example, if you are using your router as a terminal server to make console-port connections to routers or other devices, you will not be able to use Telnet to connect to these devices. You will receive the message “Connection Refused.” This behavior is new as of Cisco IOS Software Release 11.1. Previous to release 11.1, the default was **transport input all**. If you are upgrading to Cisco IOS software version 11.1(1) or later from Cisco IOS software Release 11.0 or earlier, you must add the **transport input {protocol | all}** command, or you will be locked out of your router.

You can specify one protocol, multiple protocols, all protocols, or no protocols. To specify multiple protocols, enter the keyword for each protocol, separated by a space.

This command can be useful in distributing resources among different types of users, or making certain that only specific hosts can access a particular port. When using two-step protocol translation, the **transport input** command is useful in controlling exactly which protocols can be translated to other protocols.

Access lists for each individual protocol can be defined in addition to the allowances created by the **transport input** command. Any settings made with the **transport input** command override settings made with the **transport preferred** command.

Example

The following example sets the incoming protocol to Telnet for vty 0 to 32:

```
line vty 0 32
  transport input telnet
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

terminal transport input
transport output
transport preferred

transport output

To determine the protocols that can be used for outgoing connections from a line, use the **transport output** line configuration command.

transport output { **all** | **lat** | **mop** | **nasi** | **none** | **pad** | **rlogin** | **telnet** | **v120** }

Syntax Description

all	Selects all protocols.
lat	Selects the Digital LAT protocol, which is the protocol used most often to connect routers to Digital hosts.
mop	Selects Maintenance Operation Protocol (MOP).
nasi	Select NetWare Access Server Interface (NASI) as the output transport protocol.
none	Prevents any protocol selection on the line. The system normally assumes that any unrecognized command is a host name. If the protocol is set to none , the system no longer makes that assumption. No connection will be attempted if the command is not recognized.
pad	Selects X.3 PAD, used most often to connect routers to X.25 hosts.
rlogin	Selects the UNIX rlogin protocol for TCP connections. The rlogin setting is a special case of Telnet. If an rlogin attempt to a particular host has failed, the failure will be tracked, and subsequent connection attempts will use Telnet instead.
telnet	Selects the TCP/IP Telnet protocol. It allows a user at one site to establish a TCP connection to a login server at another site.
v120	Select the V.120 protocol for outgoing asynchronous over ISDN connections.

Default

Telnet

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0. The **all**, **lat**, **pad**, **rlogin**, and **v120** commands first appeared in IOS Release 11.1.

You can specify one protocol, multiple protocols, all protocols, or no protocols. To specify multiple protocols, enter the keyword for each protocol, separated by a space.

Any settings made with the **transport output** command override settings made with the **transport preferred** command.

Example

The following example prevents any protocol selection:

```
transport output none
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

terminal transport output

transport input

transport preferred

transport preferred

To specify the transport protocol that the Cisco IOS software uses if the user does not specify one when initiating a connection, use the **transport preferred** line configuration command.

transport preferred { **all** | **lat** | **mop** | **nasi** | **none** | **pad** | **rlogin** | **telnet** | **v120** }

Syntax Description

all	Specifies all recognized protocols.
lat	Selects the Digital LAT protocol, which is the protocol used most often to connect routers to Digital hosts.
mop	Specifies the Maintenance Operation Protocol (MOP).
nasi	Specifies the NetWare Access Server Interface (NASI) protocol.
none	Prevents any protocol selection on the line. The system normally assumes that any unrecognized command is a host name. If the protocol is set to none , the system no longer makes that assumption. No connection is attempted if the command is not recognized.
pad	Selects X.3 PAD, used most often to connect routers to X.25 hosts.
rlogin	Selects the UNIX rlogin protocol for TCP connections. The rlogin setting is part of the Telnet protocol. If an rlogin attempt to a particular host fails, the failure is tracked, and subsequent connection attempts will use Telnet instead.
telnet	Selects the TCP/IP Telnet protocol. It allows a user at one site to establish a TCP connection to a login server at another site.
v120	Specifies asynchronous protocols over ISDN.

Default

Telnet

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0. The **lat**, **pad**, and **rlogin** commands first appeared in Cisco IOS Release 11.1.

Specify **transport preferred none** to prevent errant connection attempts.

Any settings made with the **transport input** or **transport output** commands override settings made with the **transport preferred** command.

Example

The following example sets the preferred protocol to Telnet on physical terminal line 1:

```
line tty 1
  transport preferred telnet
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

terminal transport preferred

transport input

transport output

txspeed

To set the terminal transmit speed (how fast the terminal sends information to the modem), use the **txspeed** line configuration command.

txspeed *bps*

Syntax Description

bps Baud rate in bits per second (bps).

Default

9600 bps

Command Mode

Line configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Set the speed to match the baud rate of whatever device you have connected to the port. Some baud rates available on devices connected to the port might not be supported on the router. The Cisco IOS software will indicate if the speed you select is not supported.

Note If the line was previously configured for automatic baud rate detection (autobaud), disable autobaud by entering the **no autobaud** command before entering the **txspeed** command to fix the speed of the port.

Example

The following example sets the transmit speed for line 5 to 2400 bps:

```
line 5
txspeed 2400
```

Related Commands

You can use the master indexes or search online to find documentation of related commands.

rxspeed
speed
terminal txspeed