CHAPTER 4

Terminal Lines and Modem Commands

The line configuration commands described in this chapter are used to configure virtual terminal lines, the console port, and the auxiliary port.

For line configuration command descriptions, refer to the "Configuring Terminal Lines and Modem Support" chapter in the *Router Products Configuration Guide*.

The **history** line configuration command is described with other user interface commands in the "User Interface Commands" chapter of this manual. The **access-class** line configuration command, which applies an IP access list to a line, is described in the "Managing the System" chapter in the *Router Products Configuration Guide*.

The user-level EXEC commands that set terminal parameters for the duration of a session are documented in the *Cisco Access Connection 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*

Syntax Description

minutes	Number of minutes after which the user's session is terminated.

Default

No timeout interval is automatically set.

Command Mode

Line configuration

Usage Guidelines

This command terminates the connection after the specified time period has elapsed, regardless of whether or not 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 with the **logout-warning** command, which notifies the user of an impending logout.

Note You can set this command and an AppleTalk Remote Access (ARA) protocol time-out for the same line; however, this command supersedes any time-outs set in ARA protocol. Additionally, ARA protocol users receive no notice of any impending termination if this interval is set.

Example

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

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

Related Command

session-timeout
logout-warning

activation-character

To define the character you type at a vacant terminal to begin a terminal session, use the **activation-character** line configuration command. Use the **no** form of this command to make any character activate a terminal.

activation-character *ascii-number*
no activation-character

Syntax Description

ascii-number Decimal representation of the activation character.

Default

Return (decimal 13).

Command Mode

Line configuration

Usage Guidelines

See the "ASCII Character Set" appendix for a list of ASCII characters.

Note If you are using **autoselect**, let the activation character default to Return and let the **exec-character-bits** command default to 7. If you change these defaults, the application does not recognize the activation request.

Example

The following example sets the activation character for the console to Delete, which is decimal 127:

```
line console
activation-character 127
```

autobaud

To set the line for automatic baud detection, use the **autobaud** line configuration command. Use the **no autobaud** command to restore the default.

autobaud
no autobaud

Syntax Description

This command has no arguments or keywords.

Default

No autobaud detection

Command Mode

Line configuration

Usage Guidelines

This command pertains to the auxiliary port only.

The autobaud detection supports a range from 300 to 19200 baud. A line set for autobaud cannot be used for outgoing connections. Nor can you set autobaud capability on a line using 19200 baud when the parity bit is set because of hardware limitations.

Example

The following example sets the auxiliary port for autobaud detection:

```
line aux 0
autobaud
```

autocommand

To configure the router to execute a command or list of commands automatically when a user connects to a particular line, use the **autocommand** line configuration command.

autocommand *command*

Syntax Description

command	Any appropriate EXEC command, including the host name and any switches that occur with the EXEC command.

Default

Automatic responses are not configured.

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only.

Example

The following example forces an automatic connection to a host named host21 (which could be an IP address). In addition, the UNIX UUCP application specifies TCP socket 25, and the **/stream** switch enables a raw TCP stream with no Telnet control sequences.

```
line vty 4
autocommand connect host21 uucp /stream
```

autohangup

To configure automatic line disconnect, use the **autohangup** line configuration command. The command causes the EXEC to issue the **exit** command when the last connection closes.

autohangup

Syntax Description

This command has no arguments or keywords.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

This command is useful for UNIX UUCP applications that automatically disconnect lines because UUCP scripts cannot issue the **exit** command to hang up the telephone.

Example

The following example enables automatic line disconnect on the auxiliary port:

```
line aux 0
autohangup
```

autoselect

To configure a line to start an ARA, Point-to-Point Protocol (PPP), or SLIP session, use the **autoselect** line configuration command. Use the **no** form of this command to disable this function on a line.

autoselect {**arap** | **ppp** | **slip**} | **during-login**
no autoselect

Syntax Description

arap	Configures the router to allow an ARA session to start up automatically.
ppp	Configures the router to allow a PPP session to start up automatically.
slip	Configures the router to allow a SLIP session to start up automatically.
during-login	(Optional) The user receives a username and/or password prompt without pressing the Return key. After the user logs in, the autoselect function begins.

Default

Configures the router to allow an ARA session to start up automatically.

Command Mode

Line configuration

Usage Guidelines

This command eliminates the need for users to enter an EXEC command to start an ARA, PPP, or SLIP session.

Note SLIP does not support authentication. For PPP and ARA protocol, you must enable authentication.

The **autoselect** command configures the router to identify the type of connection being requested. For example, when a user on a Macintosh running ARA selects the Connect button, the router automatically starts an ARA protocol session. If, on the other hand, the user is running SLIP or PPP and uses the **autoselect ppp** or **autoselect slip** command, the router automatically starts a PPP or SLIP session, respectively. This command is appropriate for lines used to make different types of connections.

A line that does not have **autoselect** configured regards an attempt to open a connection as noise. Then when the router does not respond, the user client times out.

Note After the modem connection is established, a Return is required to evoke a response such as the username prompt. You might need to update your scripts to include this requirement. Additionally, let the activation character default to Return, and the **exec-character-bits** default to 7. If you change these defaults, the application does not recognize the activation request.

Examples

The following example enables ARA on a line:

```
line 3
arap enable
autoselect arap
```

The following example enables PPP on a line:

```
line 7
autoselect ppp
```

The following example enables ARA on a line and allows logins from users with a modified CCL script and an unmodified script to log in:

```
line 3
arap enable
autoselect arap
autoselect during-login
arap noguest if-needed
```

Related Commands

ppp authentication chap
ppp authentication pap
arap use-tacacs
ppp use-tacacs

banner exec

To display a message on terminals with an interactive EXEC, use the **banner exec** global configuration command. This command specifies a message to be displayed on when an EXEC process is created (line activated, or incoming connection to VTY).

banner exec *d message d*

Syntax Description

d Delimiting character of your choice—a pound sign (#), for example. You cannot use the delimiting character in the banner message.

message Message text.

Default

Banners are not displayed.

Command Mode

Global configuration

Usage Guidelines

Follow the command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character.

Example

The following example sets an EXEC message. The dollar sign ($) is used as a delimiting character.

```
banner exec $
Session activated. Enter commands at the prompt.
$
```

Related Commands

banner incoming
banner motd
exec-banner

banner incoming

To specify a message used when you have an incoming connection to a line from a host on the network, use the **banner incoming** global configuration command. An incoming connection is one initiated from the network side of the router. The EXEC banner can be suppressed on certain lines using the **no exec-banner** line configuration command. This line should *not* display the EXEC or MOTD banners when an EXEC is created.

banner incoming *d message d*

Syntax Description

d Delimiting character of your choice—a pound sign (#), for example. You cannot use the delimiting character in the banner message.

message Message text.

Default

No incoming banner is displayed.

Command Mode

Global configuration

Usage Guidelines

Follow the command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character.

Example

The following example sets an incoming connection message. The pound sign (#) is used as a delimiting character.

```
banner incoming #
Welcome to Rhesus.
#
```

Related Commands

banner exec
banner motd
exec-banner

banner motd

To specify a message-of-the-day (MOTD) banner, use the **banner motd** global configuration command.

banner motd *d message d*

Syntax Description

d	Delimiting character of your choice—a pound sign (#), for example. You cannot use the delimiting character in the banner message.
message	Message text.

Default

Disabled

Command Mode

Global configuration

Usage Guidelines

Follow the command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character.

This message-of-the-day banner is displayed to all terminals connected, and is useful for sending messages that affect all users; impending system shutdowns, for example.

The **banner** command without any keywords specified defaults to the **banner motd** command. When a new **banner motd** command is added to the configuration, it overwrites the existing **banner** command (no keyword specified). Similarly, if a **banner** command is added to the configuration, any exiting **banner motd** command is overwritten.

Example

The following example sets a message-of-the-day banner. The pound sign (#) is used as a delimiting character.

```
banner motd #
Building power will be off from 7:00 AM until 9:00 AM this coming Tuesday.
#
```

Related Commands

banner exec
banner incoming
exec-banner

busy-message

To create a “host failed” message that displays when a connection fails, use the **busy-message** global configuration command. Use the **no busy-message** command to disable the “host failed” message from displaying on the specified host.

busy-message *hostname d message d*
no busy-message *hostname*

Syntax Description

hostname Name of the host that cannot be reached.

d Delimiting character of your choice—a pound sign (#), for example. You cannot use the delimiting character in the message.

message Message text.

Default

The “host failed” message is not displayed.

Command Mode

Global configuration

Usage Guidelines

This command applies only to Telnet connections.

Follow the **busy-message** command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character.

Defining a “host failed” message for a host prevents all router-initiated user messages, including the initial message that indicates the connection is “Trying...” The **busy-message** command can be used in the **autocommand** command to suppress these messages.

Example

The following example sets a message that will be displayed on the terminal whenever an attempt to connect to the host named dross fails. The pound sign (#) is used as a delimiting character.

```
busy-message dross #
Cannot connect to host. Contact the computer center.
#
```

databits

To set the number of data bits per character that are interpreted and generated by hardware, use the **databits** line configuration command.

databits {**5** | **6** | **7** | **8**}

Syntax Description

5	Five data bits per character.
6	Six data bits per character.
7	Seven data bits per character.
8	Eight data bits per character.

Default

8 data bits per character

Command Mode

Line configuration

Usage Guidelines

This command pertains to the auxiliary port only.

The **databits** line configuration command can be used to mask the high bit on input from devices that generate 7 data bits with parity. If parity is being generated, specify 7 data bits per character. If no parity generation is in effect, specify 8 data bits per character. The other keywords are supplied for compatibility with older devices and generally are not used.

Example

The following example changes the data bits to 7 on the auxiliary port:

```
line aux 0
databits 7
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide.*

terminal data-character-bits ††
terminal databits ††

data-character-bits

To set the number of data bits per character that are interpreted and generated by software, use the **data-character-bits** line configuration command.

data-character-bits {**7** | **8**}

Syntax Description

7	Seven data bits per character.
8	Eight data bits per character.

Default

8 data bits per character

Command Mode

Line configuration

Usage Guidelines

The **data-character-bits** line configuration command is used primarily to strip parity from X.25 connections on IGS or Cisco 3000 routers with the protocol translation software option. The **data-character-bits** line configuration command does not work on hardwired lines.

Example

The following example sets the number of data bits per character for virtual terminal line 1 to 7:

```
line vty 1
data-character-bits 7
```

default-value exec-character-bits

To define the EXEC character width for either 7 bits or 8 bits, use the **default-value exec-character-bits** global configuration command.

default-value exec-character-bits {**7** | **8**}

Syntax Description

7	Selects the 7-bit ASCII character set.
8	Selects the full 8-bit ASCII character set.

Default

7-bit ASCII character set

Command Mode

Global configuration

Usage Guidelines

Configuring the EXEC character width to 8 bits allows you to add graphical and international characters in banners, prompts, and so forth. However, setting the EXEC character width to 8 bits can also cause failures. If a user on a terminal that is sending parity enters the command **help**, an "unrecognized command" message appears because the system is reading all 8 bits, although the eighth bit is not needed for the **help** command.

Example

The following example selects the full 8-bit ASCII character set for EXEC banners and prompts:

```
default-value exec-character-bits 8
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connnection Guide*.

default-value special-character-bits
exec-character-bits
special-character-bits
terminal exec-character-bits ††
terminal special-character-bits ††

default-value special-character-bits

To configure the flow control default value from a 7-bit width to an 8-bit width, use the **default-value special-character-bits** global configuration command.

default-value special-character-bits {**7** | **8**}

Syntax Description

7 Selects the 7-bit character set.

8 Selects the full 8-bit character set.

Default

7-bit character set

Command Mode

Global configuration

Usage Guidelines

Configuring the special character width to 8 bits allows you to add graphical and international characters in banners, prompts, and so forth.

Example

The following example selects the full 8-bit special character set:

```
default-value special-character-bits 8
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

default-value exec-character-bits
exec-character-bits
special-character-bits
terminal exec-character-bits ††
terminal special-character-bits ††

disconnect-character

To define a character to disconnect a session, use the **disconnect-character** line configuration command. This command defines the character you enter to end a terminal session. Use the **no disconnect-character** command to remove the disconnect character.

disconnect-character *ascii-number*
no disconnect-character

Syntax Description

ascii-number ASCII decimal representation of the session disconnect character.

Default

No disconnect character is defined.

Command Mode

Line configuration

Usage Guidelines

The Break character is represented by zero; NULL cannot be represented.

To use the session disconnect character in normal communications, precede it with the escape character. See the “ASCII Character Set” appendix for a list of ASCII characters.

Example

The following example sets the disconnect character for virtual terminal line 4 to Escape, which is ASCII character 27:

```
line vty 4
disconnect-character 27
```

dispatch-character

To define a character that causes a packet to be sent, use the **dispatch-character** line configuration command. Use the **no dispatch-character** command to remove the definition of the specified dispatch character.

dispatch-character *ascii-number1* [*ascii-number2 . . . ascii-number*]
no dispatch-character *ascii-number1* [*ascii-number2 . . . ascii-number*]

Syntax Description

ascii-number	ASCII decimal representation of the character, such as Return (ASCII decimal 13) for line-at-a-time transmissions.

Default

No dispatch character is defined.

Command Mode

Line configuration

Usage Guidelines

This **dispatch-character** command defines a dispatch character that causes a packet to be sent even if the dispatch timer has not expired. It causes the router to attempt to buffer characters into larger-sized packets for transmission to the remote host. The router normally dispatches each character as it is typed.

This command can take multiple arguments, so you can define any number of characters as dispatch characters.

Example

The following example specifies the Return character as the dispatch character:

```
line vty 4
dispatch-character 13
```

Related Command

dispatch-timeout

dispatch-timeout

To set the character dispatch timer, use the **dispatch-timeout** line configuration command. Use the **no dispatch-timeout** command to remove the timeout definition.

dispatch-timeout *milliseconds*
no dispatch-timeout

Syntax Description

milliseconds	Integer that specifies the number of milliseconds the router waits after putting the first character into a packet buffer before sending the packet. During this interval, more characters may be added to the packet, which increases the processing efficiency of the remote host.

Default

No dispatch timeout is defined.

Command Mode

Line configuration

Usage Guidelines

The **dispatch-timeout** line configuration command causes the router to buffer characters into packets for transmission to the remote host. The router sends a packet a specified amount of time after the first character is put in the buffer. The router normally dispatches each character as it is entered. You can use the **dispatch-timeout** and **dispatch-character** line configuration commands together. In this case, the router dispatches a packet each time the dispatch character is entered, or after the specified dispatch timeout interval, depending on which condition is met first.

Note The router's response might appear intermittent if the timeout interval is greater than 100 milliseconds and remote echoing is used.

Example

The following example sets the dispatch timer to 80 milliseconds:

```
line vty 0 4
dispatch-timeout 80
```

Related Command

dispatch-characterr

escape-character

To define a system escape character, use the **escape-character** line configuration command. The **no escape-character** command sets the escape character to Break.

escape-character *ascii-number*
no escape-character

Syntax Description

ascii-number	Either the ASCII decimal representation of the character or a control sequence (Ctrl-E, for example). Ctrl-^ is the default.

Default

Ctrl-^

Command Mode

Line configuration

Usage Guidelines

The Break key cannot be used as an escape character on the console terminal because the operating software interprets Break as an instruction to halt the system. To send the escape character to the other side, press Ctrl-^ twice.

See the “ASCII Character Set” appendix for a list of ASCII characters.

Example

The following example sets the escape character to Ctrl-P, which is ASCII character 16:

```
line console
escape-character 16
```

exec

To allow an EXEC process on a line, use the **exec** line configuration command. The **no exec** command turns off the EXEC process for the line specified.

exec
no exec

Syntax Description

This command has no arguments or keywords.

Default

By default, the router starts EXECs on all lines.

Command Mode

Line configuration

Usage Guidelines

When you want to allow an outgoing connection *only* for a line, use the **no exec** command. When a user tries to Telnet to a line with the **no exec** command configured, the user will get no response when pressing the Return key at the login screen.

Example

The following example illustrates how to turn off the EXEC on line 7. You might want to do this on the auxiliary port if the attached device (for example, the control port of a rack of modems) sends unsolicited data to the router. An EXEC would start if this happened, making the line unavailable.

```
line 7
no exec
```

exec-banner

To control whether banners are displayed or suppressed, use the **exec-banner** line configuration command. This command determines whether the router will display the EXEC banner or the message-of-the-day (MOTD) banner when an EXEC is created. The **no exec-banner** command suppresses the banner messages.

exec-banner
no exec-banner

Syntax Description

This command has no arguments or keywords.

Default

By default, the messages defined with **banner motd** and **banner exec** commands are displayed on all lines.

Command Mode

Line configuration

Example

The following example suppresses the banner on virtual terminal lines 0 to 4:

```
line aux 0
no exec-banner
```

Related Commands

banner exec
banner motd

exec-character-bits

To configure the character widths of EXEC and configuration command characters, use the **exec-character-bits** line configuration command.

exec-character-bits {**7** | **8**}

Syntax Description

7	Selects the 7-bit character set.
8	Selects the full 8-bit character set for use of international and graphical characters in banner messages, prompts, and so forth.

Default

7-bit ASCII character set

Command Mode

Line configuration

Usage Guidelines

Setting the EXEC character width to 8 allows you to use special graphical and international characters in banners, prompts, and so forth. However, setting the EXEC character width to 8 bits can cause failures. If a user on a terminal that is sending parity enters the command **help**, an "unrecognized command" message appears because the system is reading all 8 bits, although the eighth bit is not needed for the **help** command.

Note If you are using the **autoselect** command, set the **activation-character** to the default Return and **exec-character-bits** to the default 7. If you change these defaults, the application does not recognize the activation request.

Example

The following example allows full 8-bit international character sets by default, except for the console, which is an ASCII terminal. It illustrates use of the **default-value exec-character-bits** global configuration command and the **exec-character-bits** line configuration command.

```
default-value exec-character-bits 8
line 0
exec-character-bits 7
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

default-value exec-character-bits
default-value special-character-bits
special-character-bits
terminal exec-character-bits ††
terminal special-character-bits ††

exec-timeout

To set the interval that the EXEC command interpreter waits until user input is detected, use the **exec-timeout** line configuration command. The **no exec-timeout** command removes the timeout definition.

exec-timeout *minutes* [*seconds*]
no exec-timeout

Syntax Description

minutes	Integer that specifies the number of minutes.
seconds	(Optional) Additional time intervals in seconds. An interval of zero specifies no time-outs.

Default

10 minutes

Command Mode

Line configuration

Usage Guidelines

If no input is detected, the EXEC resumes the current connection, or if no connections exist, it returns the terminal to the idle state and disconnects the incoming session.

The **no** version of this command has the same effect as the **exec-timeout 0** command.

Examples

The following example sets a time interval of 2 minutes, 30 seconds:

```
line console
exec-timeout 2 30
```

The following example sets a time interval of 10 seconds:

```
line console
exec-timeout 0 10
```

flowcontrol

To set the method of data flow control between the terminal or other serial device and the router, use the **flowcontrol** line configuration command. To disable flow control, use the **no** form of this command.

flowcontrol {**none** | **software** [**in** | **out**] | **hardware** [**in** | **out**]}
no flowcontrol {**none** | **software** [**in** | **out**] | **hardware** [**in** | **out**]}

Syntax Description

none Turns off flow control.

software Sets software flow control. An optional keyword specifies the direction: **in** causes the router to listen to flow control from the attached device, and **out** causes the router to send flow control information to the attached device. If you do not specify a direction, both are assumed.

hardware Sets hardware flow control. An optional keyword specifies the direction: **in** causes the router to listen to flow control from the attached device, and **out** causes the router to send flow control information to the attached device. If you do not specify a direction, both are assumed. For more information about hardware flow control, see the hardware installation and maintenance manual for your router.

Default

Flow control is disabled.

Command Mode

Line configuration

Usage Guidelines

This command pertains to the auxiliary port only.

When software flow control is set, the default stop and start characters are Ctrl-S and Ctrl-Q (XOFF and XON). You can change them with the **stop-character** and **start-character** commands.

Example

The following example sets hardware flow control on the auxiliary port:

```
line aux 0
flowcontrol hardware
```

Related Commands

start-character
stop-character

hold-character

To define the local hold character used to pause output to the terminal screen, use the **hold-character** line configuration command. The **no hold-character** command restores the default.

hold-character *ascii-number*
no hold-character

Syntax Description

ascii-number	Either the ASCII decimal representation of the hold character or a control sequence (for example, Ctrl-P).

Default

No hold character is defined.

Command Mode

Line configuration

Usage Guidelines

The Break character is represented by zero; NULL cannot be represented. To continue the output, type any character after the hold character. To use the hold character in normal communications, precede it with the escape character. See the "ASCII Character Set" appendix for a list of ASCII characters.

Example

The following example sets the hold character to Ctrl-S, which is ASCII decimal 19:

```
line aux 0
hold-character 19
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connnection Guide*.

terminal hold-character ††

length

To set the terminal screen length, use the **length** line configuration command.

length *screen-length*

Syntax Description

screen-length	Number of lines on the screen. A value of zero disables pausing between screens of output.

Default

24 lines

Command Mode

Line configuration

Usage Guidelines

Not all commands recognize the configured screen length. For example, the **show terminal** command assumes a screen length of 24 lines or more. The router software uses the value of this command to determine when to pause during multiple-screen output.

Example

The following example illustrates how to disable the screen pause function on the console terminal:

```
line console
terminal-type VT220
length 0
```

line

To configure a console port line, auxiliary port line, or virtual terminal lines, use the **line** global configuration command.

line [**aux** | **console** | **vty**] *line-number* [*ending-line-number*]

Syntax Description

aux	(Optional) Enables the auxiliary RS-232 DTE port. Must be addressed as relative line 0. The auxiliary port can be used for modem support and asynchronous connections.
console	(Optional) Specifies the console terminal line. The console port is DCE.
vty	(Optional) Specifies a virtual terminal for remote console access.
line-number	Specifies the relative number of the terminal line (or the first line in a contiguous group) you want to configure when the line type is specified. Numbering begins with zero.
ending-line-number	(Optional) Specifies the relative number of the last line in a contiguous group you want to configure. If you omit the keyword, then *line-number* and *ending-line-number* are absolute rather than relative line numbers.

Default

Lines are not configured.

Command Mode

Global configuration

Usage Guidelines

If you include one of the optional type keywords (**aux**, **console**, or **vty**), the line number is treated as a relative line number. If you enter the **line** command without an optional type keyword, the line number is treated as an absolute line number. Absolute line numbers increment consecutively and can be difficult to manage on large systems.

You can set communication parameters, specify autobaud connections, configure terminal operating parameters, and more for any of the terminal lines on the router.

The relative line number of the auxiliary port must be 0. See the **modem** line configuration command to set up modem support on the auxiliary port. The absolute line number of the auxiliary port is 1.

Virtual terminal lines are used to allow remote access to the router. A virtual terminal line is not associated with either the console or auxiliary port. You can address a single line or a consecutive range of lines with the **line** command. A line number is necessary, though, and you will receive an error message if you forget to include it.

Examples

The following example starts configuration for virtual terminal lines 0 to 4:

```
line vty 0 4
```

The following example configures the auxiliary port with a line speed of 2400 baud and enables the EXEC:

```
line aux 0
exec
speed 2400
```

Related Commands

Two daggers indicate that the command is documented in the *Cisco Access Connection Guide*.

show line
show users all ††

location

To record the location of a serial device, use the **location** line configuration command. The **no location** command removes the description.

location *text*
no location

Syntax Description

text	Location description.

Default

Locations of serial devices are not recorded.

Command Mode

Line configuration

Usage Guidelines

The **location** command enters information about the device location and status. Use the EXEC command **show users all** to display the location information.

Example

The following example identifies the location of the console:

```
line console
location Building 3, Basement
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

show users all ††

lockable

To enable the EXEC command **lock**, use the **lockable** global configuration command The **no lockable** command reinstates the default, which does not allow the terminal to be locked.

lockable
no lockable

Syntax Description

This command has no arguments or keywords.

Default

Not lockable

Command Mode

Global configuration

Usage Guidelines

This command allows a terminal to be temporarily inaccessible by use of a temporary password.

Example

The following example sets the terminal to the lockable state:

```
lockable
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

lock ††

login (line configuration)

To enable password checking at login, use the **login** line configuration command. Use the **no login** 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 TACACS-style user ID and password-checking mechanism.

Default

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

Command Mode

Line configuration

Usage Guidelines

If you specify **login** 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 illustrates how to enable the TACACS-style user ID and password-checking mechanism:

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

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

enable password †
password
username †

login authentication

To enable AAA/TACACS+ 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*}
no login authentication {**default** | *list-name*}

Syntax Description

default	Uses the default list created with the **aaa authentication login** command.
list-name	Uses the indicated list created with the **aaa authentication login** command.

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

Default

Login authentication uses the default set with **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 Guideline

This command is a per-line command used with AAA, and specifies the name of a list of TACACS+ authentication processes to try at login. If no list is specified, the default list is used (whether or not it is specified in the command line). You create defaults and lists by using 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 by using the global configuration **aaa authentication login** command.

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 Command

aaa authentication login

login-string

To define a string of characters that the router sends to a host after a successful Telnet connection, use the **login-string** global configuration command. This command applies only to rlogin and Telnet sessions. The **no login-string** command removes the login string.

login-string *hostname d message* [**%***sec***p**] [**%***sec***w**] [**%b**] *d*
no login-string *hostname*

Syntax Description

hostname	Specifies the name of the host.
d	Sets a delimiting character of your choice—a pound sign (#) for example. You cannot use the delimiting character in the busy message.
message	Specifies the login string.
%*sec***p**	(Optional) Sets a pause in seconds. To insert pauses into the login string, embed a percent sign (%) followed by the number of seconds to pause and the letter "p."
%*sec***w**	(Optional) Prevents users from issuing commands or keystrokes during a pause.
%b	(Optional) Sends a Break character.

Default

No login strings are defined.

Command Mode

Global configuration

Usage Guidelines

Follow the command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character. To use a percent sign in the login string, precede it with another percent sign; that is, type the characters "%%." The options can be used anywhere within the message string.

Example

In the following example, the value %5p causes a 5-second pause:

```
login-string office #ATDT 555-1234
%5p hello
#
```

modem answer-timeout

To set the amount of time that the router waits for CTS after raising DTR in response to RING, use the **modem answer-timeout** line configuration command. The **no** form of this command reverts the router to the default value.

modem answer-timeout *seconds*
no modem answer-timeout

Syntax Description

seconds	Specifies the timeout interval in seconds.

Default

15 seconds

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only. It is useful for modems that take a long time to synchronize to the appropriate line speed.

Example

The following example sets the timeout interval to 20 seconds:

```
line aux 0
modem answer-timeout 20
```

Related Commands

modem callin
modem in-out

modem callin

To support dial-in modems that use DTR to control the off-hook status of the modem, use the **modem callin** line configuration command. In response to RING, the modem raises the DTR signal, which answers the modem. At the end of the session, the router lowers DTR, which disconnects the modem. The **no** form of this command disables this feature.

modem callin
no modem callin

Syntax Description

This command has no arguments or keywords.

Default

No modem control

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only.

Example

The following example causes the modem connected to the router to raise DTR in response to RING:

```
line aux 0
modem callin
```

Related Commands

modem answer-timeout
modem in-out

modem callout

To configure a line for reverse connections, use the **modem callout** line configuration command. The **no** form of this command disables this feature.

modem callout
no modem callout

Syntax Description

This command has no arguments or keywords.

Default

No modem control

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only and supports ports connected to computers that are designed to be connected to modems.

Example

The following example configures the line for reverse connections:

```
line aux 0
modem callout
```

Related Commands

modem in-outt
rotary

modem cts-required

To configure a line to require a Clear To Send (CTS) signal, use the **modem cts-required** line configuration command. Use the **no** form of this command to disable this feature.

modem cts-required
no modem cts-required

Syntax Description

This command has no arguments or keywords.

Default

No modem control

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only. It supports lines that either the user or the network can activate. It is useful for closing connections from a user's terminal when the terminal is turned off and for preventing disabled printers and other devices in a rotary group from being considered.

Example

The following example configures a line to require a CTS signal:

```
line aux 0
modem cts-required
```

Related Command

rotary

modem dtr-active

To configure a line to leave DTR low unless the line has an active incoming connection or an EXEC process, use the **modem dtr-active** line configuration command. The **no** form of this command disables this feature.

modem dtr-active
no modem dtr-active

Syntax Description

This command has no arguments or keywords.

Default

No modem control

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only. It can be useful if the line is connected to an external device (for example, a timesharing system) that needs to know whether a line is in active use. The **modem dtr-active** command is similar to the **no modem** line configuration command.

Example

The following example illustrates how to configure the auxiliary port for low DTR:

```
line aux 0
modem dtr-active
```

modem in-out

To configure a line for both incoming and outgoing calls, use the **modem in-out** line configuration command. The **no** form of this command disables this feature.

modem in-out
no modem in-out

Syntax Description

This command has no arguments or keywords.

Default

No modem control

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only.

Example

The following example illustrates how to configure the auxiliary port for both incoming and outgoing calls:

```
line aux 0
modem in-out
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

dialer †
parity

modem ri-is-cd

To configure a line for a high-speed modem, use the **modem ri-is-cd** line configuration command. The **no** form of this command disables this feature.

modem ri-is-cd
no modem ri-is-cd

Syntax Description

This command has no arguments or keywords.

Default

No modem control

Command Mode

Line configuration

Usage Guidelines

This command applies to the auxiliary port only. It supports modems that can automatically handle telephone line activity, such as answering the telephone after a certain number of rings.

Example

The following example illustrates how to configure the auxiliary port for a high-speed modem:

```
line aux 0
modem ri-is-cd
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

dialer †
parity

notify

To enable terminal notification about pending output from other connections, use the **notify** line configuration command. The **no notify** command ends notification.

notify
no notify

Syntax Description

This command has no arguments or keywords.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

The command sets a line to inform a user who has multiple, concurrent Telnet connections when output is pending on a connection other than the current one.

Example

The following example sets up notification of pending output from connections on virtual terminal lines 0 to 4:

```
line vty 0 4
notify
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal notify ††

padding

To set the padding on a specific output character, use the **padding** line configuration command. The **no padding** command removes padding for the specified output character.

padding *ascii-number count*
no padding *ascii-number*

Syntax Description

ascii-number	ASCII decimal representation of the character.
count	Number of NULL bytes sent after that character, up to 255 padding characters in length.

Default

Padding is not configured.

Command Mode

Line configuration

Usage Guidelines

Use this command if the device attached is an old terminal that requires padding after certain characters (such as ones that scrolled or moved the carriage). See the "ASCII Character Set" appendix for a list of ASCII characters.

Example

The following example pads a Return (ASCII decimal 13) with 25 NULL bytes:

```
line console
padding 13 25
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal padding ††

parity

To define generation of a parity bit, use the **parity** line configuration command.

parity {**none** | **even** | **odd** | **space** | **mark**}

Syntax Description

none No parity.

even Even parity.

odd Odd parity.

space Space parity.

mark Mark parity.

Default

No parity

Command Mode

Line configuration

Usage Guidelines

This command pertains to the auxiliary port only.

Example

The following example changes the default of no parity to even parity:

```
line aux 0
parity even
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal parity ††

password

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

password *password*
no password

Syntax Description

password — Case-sensitive 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 *password* in the format *number-space-anything*. The space after the number causes problems. For example, *hello 21* is a legal password, but *21 hello* is not. The password checking is case sensitive. For example, the password *Secret* is different than the password *secret*.

Default

No password is specified.

Command Mode

Line configuration

Usage Guidelines

When an EXEC 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

A dagger (†) indicates that the command is documented in another chapter.

enable password †
login (line configuration)

private

To save user EXEC command changes between terminal sessions, use the **private** line configuration command. Use the **no private** command to restore the default condition.

private
no private

Syntax Description

This command has no arguments or keywords.

Default

User-set configuration options are cleared with the EXEC command **exit** or when the interval set with the **exec-timeout** line configuration command has passed.

Command Mode

Line configuration

Usage Guidelines

This command ensures that the terminal parameters the user sets remain in effect between terminal sessions. This behavior is desirable for terminals in private offices.

Example

The following example sets up virtual terminal line 1 to keep all user-supplied settings at system restarts:

```
line vty 1
private
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

exec-timeout
exit †

refuse-message

To define a line-in-use message, use the **refuse-message** line configuration command. Use the **no refuse-message** command to disable the message.

refuse-message *d message d*
no refuse-message

Syntax Description

d	Delimiting character of your choice—a pound sign (#) for example. You cannot use the delimiting character in the message.
message	Message text.

Default

No line-in-use message is defined.

Command Mode

Line configuration

Usage Guidelines

Follow the command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character. You cannot use the delimiting character within the text of the message.

When you define a message using this command, the router does the following:

1. Accepts the connection.
2. Prints the custom message.
3. Clears the connection.

Example

In the following example, line 0 is configured with a lines-in-use message, and the user is instructed to try again later:

```
line aux 0
refuse-message  /The dial-out modem is currently in use.

Please try again later./
```

rotary

To define a group of lines consisting of one of more virtual terminal lines or one auxiliary port line, use the **rotary** line configuration command. Use the **no rotary** command to remove a line or group of lines from a rotary group.

rotary *group*
no rotary

Syntax Description

group	Integer between 1 and 100 that you choose to identify the rotary group.

Default

No rotary groups are defined.

Command Mode

Line configuration

Usage Guidelines

Typically, rotary groups are used on devices with multiple modem connections to allow connections to the next free line in a hunt group. On routers, which can have only one modem line (the auxiliary port), rotary groups are still useful for defining groups of virtual terminal lines, or for defining a rotary group consisting of the single auxiliary port. Putting the auxiliary port in a rotary group is useful because the auxiliary port is not necessarily the same line on all hardware; by putting it in a rotary group, you don't have to track the line number.

Connections to a rotary group can take advantage of the following features:

- Clear To Send (CTS)—If a line in a rotary group is configured to require CTS, the router skips that line if CTS from the attached device is low. This feature enables the router to automatically avoid inactive host ports. To enable this feature, use the **modem cts-required** line configuration command.
- RS-232 handshaking—Rotary groups are often associated with large terminal switches that require an RS-232 handshake before forming a connection. In this case, use the **modem callout** line configuration command to configure the lines in the group. If the RS-232 handshake fails on a line, the router steps to the next free line in the rotary group and restarts the negotiation.
- Access control—You can use access lists for groups of virtual terminal lines.
- Session timeout—Use the **session-timeoutt** line configuration command to set an interval for a line so that if no activity occurs on a remotely initiated connection for that interval the router closes the connection. The router assumes that the host has crashed or is otherwise inaccessible.

The remote host must specify a particular TCP port on the router to connect to a rotary group with connections to an individual line. The available services are the same, but the TCP port numbers are different. Table 4-1 lists the services and port numbers for both rotary groups and individual lines.

For example, if Telnet protocols are required, the remote host connects to the TCP port numbered 3000 (decimal) plus the rotary group number. If the rotary group identifier is 13, the corresponding TCP port is 3013.

Table 4-1 Services and Port Numbers for Rotary Groups and Lines

Services Provided	Base TCP Port for Rotaries	Base TCP Port for Individual Lines
Telnet Protocol	3000	2000
Raw TCP protocol (no Telnet protocol)	5000	4000
Telnet protocol, binary mode	7000	6000

Example

The following example establishes a rotary group consisting of virtual terminal lines 2 through 4 and defines a password on those lines. By using Telnet to connect to TCP port 3001, the user gets the next free line in the rotary group. The user does not have to remember the range of line numbers associated with the password.

```
line vty 2 4
rotary 1
password letmein
login
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

dialer †
modem callout
modem cts-required
session-timeout

rxspeed

To set the terminal baud rate receive (from terminal) speed, use the **rxspeed** line configuration command.

rxspeed *bps*

Syntax Description

bps	Baud rate in bits per second (bps); see Table 4-2 for settings.

Default

9600 bps

Command Mode

Line configuration

Usage Guidelines

This command pertains to the auxiliary port only. 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 router will indicate if the speed you select is not supported. Use Table 4-2 as a guide for setting the line speeds.

Table 4-2 Router Line Speeds in Bits per Second

Router Model	Baud Rates
Cisco 7000, AGS+, CGS, MGS	50, 75, 110, 134, 150, 200, 300, 600, 1050, 1200, 2000, 2400, 4800, 9600, 19200, 38400
Cisco 2500, Cisco 3000, Cisco 4000	75, 110, 134, 150, 300, 600, 1200, 2000, 2400, 4800, 1800, 9600, 19200, 38400

Example

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

```
line aux 0
rxspeed 2400
```

Related Commands

speed
txspeed

script activation

To specify that a chat script start on a line any time the line is activated, use the **script activation** line configuration command. Use the **no** form of this command to disable this feature.

script activation *regexp*
no script activation

Syntax Description

regexp	Regular expression specifying the set of modem scripts that might be executed. The first script name that matches the argument *regexp* is used.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

This command provides an asynchronous handshake to a user or device that activates the line. It can be used only on the auxiliary port of the router. The line can be activated by events like the following: a user issuing a carriage return on a vacant line, a modem on the line sensing an incoming carrier, or an asynchronous device (such as a communication server) sending data. Each time an EXEC session is started on a line, the system checks to see if a **script activation** command is configured on the line. If so, and the argument *regexp* (a regular expression) matches an existing chat script name, the matched script is run on the line.

The **script activation** command can mimic a login handshake of another system. For example, a system that dials into the auxiliarey port on a router and expects an IBM mainframe login handshake can be satisfied with an appropriate **activation** script.

This command can also send strings to asynchronous devices that are connecting or dialing into a communication server.

The **script activation** command functions only on physical terminal lines (tty). It does not function on virtual terminal (vty) lines.

Example

The following example specifies that the chat script with a name that includes telebit will be activated whenever line 0 is activated:

```
line aux 0
script activation telebit
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

chat-script
dialer map modem-script system-script†
dialer map modem-script system-script name†
script activation
script connection
script dialer†
script reset
script startup
start-chat

script connection

To specify that a chat script start on a line any time a remote network connection is made to a line, use the **script connection** line configuration command. Use the **no** form of this command to disable this feature.

script connection *regexp*
no script connection

Syntax Description

regexp Specifies the set of modem scripts that might be executed. The first script name that matches the argument *regexp* will be used.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

This command provides modem dialing commands and commands for logging onto remote systems. The **script connection** command functions only on physical terminal (tty) lines. It does not function on virtual terminal (vty) lines.

This command can be used to initialize an asynchronous device sitting on a line to which a reverse network connection is made. This command can only be used on the auxiliary port of the router.

Example

The following example specifies that the chat script with a name that includes inband will be activated whenever a remote connection to line 0 is established. The router can send a login string and password to the UNIX server when a network tunneling connection comes into line 0, the auxiliary port.

```
line aux 0
script connection inband
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter

chat-script
dialer map modem-script system-script †
dialer map modem-script system-script name †
script activation
script dialer †
script reset
script startup
start-chat

script reset

To specify that a chat script start on a line any time the specified line is reset, use the **script reset** line configuration command. Use the **no** form of this command to disable this feature.

script reset *regexp*
no script reset

Syntax Description

regexp	Regular expression specifying the set of modem scripts that might be executed. The first script name that matches the argument *regexp* is used.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

Chat scripts provide modem dialing commands and commands for logging onto remote systems. Use this command to reset a modem attached to a line every time a call is dropped.

The **script reset** command functions only on physical terminal lines (tty). It does not function on virtual terminal (vty) lines. This command can only be used on the auxiliary port of the router.

Example

This example specifies that any chat script name with the word *linebackup* in it will be activated any time line 0 is reset:

```
line aux 0
script reset linebackup
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

chat-script
dialer map modem-script system-script †
dialer map modem-script system-script name †
script activation
script connection
script dialer†
script startup
start-chat

script startup

To specify that a chat script start on a line any time the router is powered up, use the **script startup** line configuration command. Use the **no** form of this command to disable this feature.

script startup *regexp*
no script startup

Syntax Description

regexp	Regular expression specifying the set of modem scripts that might be executed. The first script name that matches the argument *regexp* is used.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

Use this command to initialize asynchronous devices connected to a line when the router is powered up or reloaded. You can also use it to start up a banner other than the default banner on lines. The **script startup** command functions only on physical terminal (tty) lines. It does not function on virtual terminal (vty) lines. This command can only be used on the auxiliary port of the router.

Example

The following example specifies the startup chat script as *linestart*:

```
line 0
script startup linestart
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

chat-script
dialer map modem-script system-script†
dialer map modem-script system-script name†
script activation
script connection
script dialer †
script reset
start-chat

service linenumber

To configure the router to display line number information after the EXEC or incoming banner, use the **service linenumber** global configuration command. To disable this function, use the **no** form of the command.

service linenumber
no service linenumber

Syntax Description

This command has no arguments or keywords.

Default

Disabled

Command Mode

Global configuration

Usage Guidelines

With the **service linenumber** command, you can have the router display the host name, line number, and location each time an EXEC is started or an incoming connection is made. The line number banner appears immediately after the EXEC banner or incoming banner. It is useful for tracking problems with modems because the host and line for the modem connection are listed. Modem type information can also be included.

Example

The following example illustrates the type of line number information that can appear after the EXEC banner:

```
user1@location1%telnet router2 2001
Trying 131.109.44.37
Connected to user1-gw.cisco.com
Escape character is '^]'.

router1 line 1 virtual terminal 0
```

session-limit

To set the maximum number of terminal sessions per line, use the **session-limit** line configuration command. The **no session-limit** command removes 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

Example

The following example limits the number of sessions to eight on the auxiliary port:

```
line aux 0
session-limit 8
```

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. The **no session-timeout** command removes the timeout definition.

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

Syntax Description

minutes	Specifies the time 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 sets the interval that the router waits for traffic before closing the connection to a remote computer and returning the terminal to an idle state. If the keyword **output** is not specified, the session timeout interval is based solely on detected input from the user. You can specify a session timeout on each port.

Example

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 aux 0
session-timeout 20
```

show line

To display a terminal line's parameters, use the **show line** EXEC command.

show line [*line-number*]

Syntax Description

line-number (Optional) Absolute line number of the line for which you want to list parameters.

Command Mode

EXEC

Sample Display

The following sample output from the **show line** command shows that line 2 is a virtual terminal with a transmit and receive rate of 9600 bps. Also shown is the modem state, terminal screen width and length, and so on.

Overruns occur when the UART serving the line receives a byte but has nowhere to put it because previous bytes have not been taken from the UART by the host CPU. The byte is lost, and the overrun count increases when theCPU next looks at UART status.

```
Router# show line 2

 Tty Typ     Tx/Rx    A Modem  Roty AccO AccI  Uses    Noise   Overruns
   2 VTY  9600/9600  -    -      -    -    -     0        0        0/0

Line 2, Location: "", Type: ""
Length: 24 lines, Width: 80 columns
Baud rate (TX/RX) is 9600/9600
Status: No Exit Banner
Capabilities: none
Modem state: Idle
Special Chars: Escape  Hold  Stop  Start  Disconnect  Activation
                ^^x    none   -     -       none
Timeouts:      Idle EXEC    Idle Session   Modem Answer  Session   Dispatch
               0:10:00        never         0:00:15      not imp   not set
Session limit is not set.
Editing is enabled.
History is enabled, history size is 10.
Allowed transports are telnet mop.  Preferred is telnet.
No output characters are padded
Characters causing immediate data dispatching:
   Char    ASCII
```

Table 4-3 describes the fields shown in this display.

Table 4-3 Show Line Field Descriptions

Field	Description
Tty	Line number. In this case, 17.
Typ	Type of line. In this case, a virtual terminal line (VTY), which is active, in asynchronous mode denoted by the preceding 'A.' Other possible values are: • CTY—console • AUX—auxiliary port • TTY—asynchronous terminal port • lpt—parallel printer
Tx/Rx	Transmit rate/receive rate of the line.
A	Indicates whether or not autobaud has been configured for the line. A value of F indicates that autobaud has been configured; a hyphen indicates that it has not been configured.
Modem	Types of modem signals that has been configured for the line. Possible values include: • callin • callout • cts-req • DTR-Act • inout • RIisCD
Roty	Rotary group configured for the line.
AccO, AccI	Output or Input access list number configured for the line.
Uses	Number of connections established to or from the line since the system was restarted.
Noise	Number of times noise has been detected on the line since the system restarted.
Overruns	Hardware (UART) overruns and/or software buffer overflows, both defined as the number of overruns or overflows that have occurred on the specified line since the system was restarted. Hardware overruns are buffer overruns; the UART chip has received bits from the software faster than it can process them. A software overflow occurs when the software has received bits from the hardware faster than it can process them.
Line	Current line.
Location	Location of the current line.
Type	Type of line, as specified by the **line** global configuration command.
Length	Length of the terminal or screen display.
Width	Width of the terminal or screen display.
Baud rate (TX/RX)	Transmit rate/receive rate of the line.
Status	State of the line: Ready or not, connected or disconnected, active or inactive, exit banner or no exit banner, async interface active or inactive.
Capabilities	Current terminal capabilities. In this case, the line is usable as an asynchronous interface.
Modem state	Modem control state. This field should always read READY.

Field	Description
Special Characters	Current settings that were input by the user (or taken by default) from the following global configuration commands: • **escape-character** • **hold-character** • **stop-character** • **start-character** • **disconnect-character** • **activation-character**
Timeouts	Current settings that were input by the user (or taken by default) from the following global configuration commands: • **exec-timeout** • **session-timeout** • **dispatch-timeout** • **modem answer-timeout**
Session limit	Maximum number of sessions.
Time since activation	Last time start_process was run.
Editing	Whether or not command line editing is enabled.
History	Current history length, set by the user (or taken by default) from the **history** configuration command.
Full user help	Whether or not full user help is enabled, set by the user (or taken by default) from the line configuration command.
Transport methods	Current set transport method, set by the user (or taken by default) from the **transport preferred** line configuration command.
Character padding	Current set padding, set by the user (or taken by default) from the **padding** line configuration command.
Data dispatching characters	Current dispatch character set by the user (or taken by default) from the **dispatch-character** line configuration command.
Line protocol	Definition of the specified line's protocol and address.
Output, Input Packets	Number of output and input packets queued on this line.
Group codes	:AT group codes.

special-character-bits

To configure the number of data bits per character for special characters such as software flow control characters and escape characters, use the **special-character-bits** line configuration command.

special-character-bits {**7** | **8**}

Syntax Description

7	Selects the 7-bit ASCII character set.
8	Selects the full 8-bit character set for special characters.

Default

7-bit ASCII character set

Command Mode

Line configuration

Usage Guidelines

Setting the special character bits to 8 allows you to use twice as many special characters as with the 7-bit ASCII character set. The special characters affected by this setting are the escape, hold, stop, start, disconnect, and activation characters.

Example

The following example allows the full 8-bit international character set for special characters on the auxiliary port:

```
line aux 0
special-character-bits 8
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

default-value exec-character-bits
default-value special-character-bits
exec-character-bits
terminal exec-character-bits ††
terminal special-character-bits ††

speed

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

speed *bps*

Syntax Description

bps	Baud rate in bits per second (bps); see Table 4-4 for settings.

Default

9600 bps

Command Mode

Line configuration

Usage Guidelines

This command pertains to the auxiliary port only. 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 router will indicate if the speed you select is not supported. Use the following table as a guide for setting the line speeds.

Table 4-4 Router Line Speeds in Bits per Second

Router Model	Baud Rates
Cisco 7000, AGS+, CGS, MGS	50, 75, 110, 134, 150, 200, 300, 600, 1050, 1200, 2000, 2400, 4800, 9600, 19200, 38400
Cisco 2500 series, Cisco 3000, Cisco 4000 series	75, 110, 134, 150, 300, 600, 1200, 2000, 2400, 4800, 1800, 9600, 19200, 38400

Example

The following example sets the auxiliary line to 2400 bps:

```
line aux 0
speed 2400
```

Related Commands

rxspeed
txspeed

start-character

To set the flow control start character, use the **start-character** line configuration command. The command defines the character that signals the start of data transmission when software flow control is in effect. The **no start-character** command removes the character.

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

Syntax Description

ascii-number ASCII decimal representation of the start character.

Default

ASCII decimal 17

Command Mode

Line configuration

Usage Guidelines

See the “ASCII Character Set” appendix for a list of ASCII characters.

Example

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

```
line aux 0
start-character 2
```

Related Commands

flowcontrol
stop-character

start-chat

To manually start a chat script, use the **start-chat** privileged EXEC command. Use the **no** form of this command to stop the chat script.

start-chat *regexp* [**aux 0** [*dialer-string*]]
no start-chat

Syntax Description

regexp	Regular expression specifying the name of a regular expression or modem script to be executed. If there is more than one script with a name that matches the argument *regexp*, the first script found is used.
aux 0	(Optional) Indicates the line number on which to execute the chat script. If you do not specify a line number, the current line number is chosen. If the specified line is busy, the script is not executed and an error message appears. If the dialer-string argument is specified, aux 0 must be entered; it is not optional if you specify a dialer string. This command functions only on physical terminal (tty) lines. It does not function on virtual terminal (vty) lines.
dialer-string	String of characters (often a telephone number) to be sent to a DCE. If you enter a dialer string, you must also specify **aux 0**, or the chat script *regexp* will not start.

Default

Disabled

Command Mode

Privileged EXEC

Usage Guidelines

This command provides modem dialing commands for a chat script that you want to apply immediately to a line. If you do not specify a line, the script runs on the current line. If the specified line is already in use, the script is not activated and an error message appears. This command can only be used on the auxiliary port of the router.

The argument *regexp* is used to specify the name of the modem script that is to be executed. The first script that matches the argument in this command and the dialer map command will be used. For more information about regular expressions, refer to the appendix “Regular Expressions” in this chapter.

Example

The following example manually starts the chat script with the word *telebit* in its name on line 0:

```
Cisco2509# start-chat telebit aux 0
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

chat-script
dialer map modem-script system-script†
dialer map modem-script system-script name†
script activation
script connection
script dialer †
script reset
script startup

stopbits

To set the number of the stop bits transmitted per byte, use the **stopbits** line configuration command.

stopbits {**1** | **1.5** | **2**}

Syntax Description

1 One stop bit.

1.5 One and one-half stop bits.

2 Two stop bits.

Default

2 stop bits

Command Mode

Line configuration

Example

The following example changes the default from 2 stop bits to 1 as a performance enhancement:

```
line aux 0
stopbits 1
```

stop-character

To set the flow control stop character, use the **stop-character** line configuration command. The **no stop-character** command removes the character.

stop-character *ascii-number*
no stop-character

Syntax Description

ascii-number ASCII decimal representation of the stop character.

Default

ASCII decimal 19

Command Mode

Line configuration

Usage Guidelines

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

Example

The following example changes the stop character to Ctrl-E, which is ASCII decimal 5:

```
line aux 0
stop-character 5
```

Related Commands

flowcontrol
start-character

telnet break-on-ip

To configure the router to generate a hardware Break signal upon receiving an Interrupt Process (IP) command, use the **telnet break-on-ip** line configuration command.

telnet break-on-ip

Syntax Description

This command has no arguments or keywords.

Default

Disabled.

Command Mode

Line configuration

Usage Guidelines

This command causes the system to generate a hardware Break signal on the RS-232 line that is associated with a reverse Telnet connection. It is useful when a Telnet Interrupt Process (IP) command is received on that connection because it can control the translation of Telnet IP commands into X.25 Break indications. It is also a useful workaround in the following situations:

- Several user Telnet programs send an IP command, but cannot send a Telnet break signal.
- Some Telnet programs implement a Break signal that sends an IP command.
- Some RS-232 hardware devices use a hardware Break signal for various purposes. A hardware Break signal is generated when a Telnet Break command is received.

Example

In the following example, the auxiliary port is configured with the **telnet break-on-ip** command. The location text indicates that this refers to the high-speed modem.

```
line aux 0
location high-speed modem
telnet break-on-ip
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

connect ††
telnet (EXEC) ††
terminal telnet break-on-ip ††

telnet refuse-negotiations

To configure a line using Telnet to refuse to negotiate full-duplex, remote echo options on incoming connections, use the **telnet refuse-negotiations** line configuration command.

telnet refuse-negotiations

Syntax Description

This command has no arguments or keywords.

Default

Disabled.

Command Mode

Line configuration

Usage Guidelines

This command is used on reverse Telnet connections to allow the router to refuse these requests from the other end. This command suppresses negotiation of the Telnet Remote Echo and Suppress Go Ahead options.

Example

The following example shows how to set the auxiliary port to refuse full-duplex, remote echo requests:

```
line aux 0
telnet refuse-negotiations
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connnection Guide*.

connect ††
telnet (EXEC) ††
terminal telnet refuse-negotiations ††

telnet speed

To allow the router to negotiate transmission speed of the line to a connected device, use the **telnet speed** line configuration command.

telnet speed *default-speed maximum-speed*

Syntax Description

default-speed	Line speed (in bps) that the router will use if the device on the other end of the connection has not specified a speed.
maximum-speed	Maximum speed (in bps) that the device on the port will use.

Default

Disabled

Command Mode

Line configuration

Usage Guidelines

Negotiates speeds on reverse Telnet lines. You can match line speeds on remote systems in reverse Telnet, on host machines hooked up to a router to access the network, or on a group of console lines hooked up to the 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.

Example

The following example allows the router to negotiate a bit rate on the line using the Telnet option. If no speed is negotiated, the line will run at 2400 bits per second. If the remote host requests a speed of greater than 9600 bps, then 9600 will be used.

```
line aux 0
telnet speed 2400 9600
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

connect ††
telnet (EXEC) ††
terminal telnet speed††

telnet sync-on-break

To configure the router to cause an incoming connection to send a Telnet synchronize signal when it receives a Telnet Break signal, use the **telnet sync-on-break** line configuration command.

telnet sync-on-break

Syntax Description

This command has no arguments or keywords.

Default

Disabled.

Command Mode

Line configuration

Usage Guidelines

Causes a reverse Telnet line to send a Telnet Synchronize signal when it receives a Telnet Break signal. This option is used very rarely to ensure the ordering of break reception with respect to data characters sent after the break.

Example

In the following example, the auxiliary port is configured with the **telnet sync-on-break** command:

```
line aux 0
telnet sync-on-break
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

connect ††
telnet (EXEC) ††
terminal telnet sync-on-break ††

telnet transparent

To configure the router to send a carriage return (CR) as a CR followed by a NULL instead of a CR followed by a line feed (LF), use the **telnet transparent** line configuration command.

telnet transparent

Syntax Description

This command has no arguments or keywords.

Default

Disabled.

Command Mode

Line configuration

Usage Guidelines

This command is useful for coping with different interpretations of end-of-line handling in the Telnet protocol specification.

Example

The following example causes the router, when sending a CR, to send a CR followed by a NULL character:

```
line aux 0
telnet transparent
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

connect ††
telnet (EXEC) ††
terminal telnet transparent ††

terminal-type

To specify the type of terminal connected to a line, use the **terminal-type** line configuration command. The command records the type of terminal connected to the line. The **no terminal-type** command removes any information about the type of terminal and resets the line to the default terminal emulation.

terminal-type *terminal-name*
no terminal-type

Syntax Description

terminal-name	Terminal name and type.

Default

VT100

Command Mode

Line configuration

Usage Guidelines

The argument *terminal-name* provides a record of the terminal type and allows terminal negotiation of display management by hosts that provide that type of service.

Example

The following example defines the terminal on the console as a type VT220:

```
line console
terminal-type VT220
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal terminal-type ††

transport input

To allow the system administrator to define which protocols to use to connect to a specific line of the access server, use the **transport input** line configuration command.

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

Syntax Description

input	Defines which protocols to use to on this line when connecting on an incoming call.
lat	Selects the Digital LAT protocol and specifies both incoming reverse LAT and host-initiated connections.
mop	Selects the MOP 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.
telnet	Specifies all types of incoming TCP/IP connections.
all	Selects all protocols. Restores the default configuration.

Default

All protocols allowed on the line

Command Mode

Line configuration

Usage Guidelines

You can specify one protocol, multiple protocols, all protocols, or no protocols. To specify multiple protocols, type 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 protocol translation, the **transport input** command is useful in controlling exactly which protocols can be translated to other protocols when using two-step translation.

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.

Note Unlike defaults for other commands, the default **transport input all** displays when you perform **show running config** on TTY and AUX lines to display current settings.

Example

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

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

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

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 {**lat** | **none** | **pad** | **rlogin** | **telnet** | **all**}

Syntax Description

lat	Selects the Digital LAT protocol, which is the protocol used most often to connect access servers to Digital hosts.
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 access servers 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.
all	Selects all protocols.

Default

telnet

Command Mode

Line configuration

Usage Guidelines

You can specify one protocol, multiple protocols, all protocols, or no protocols. To specify multiple protocols, type 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

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal transport output ††
transport input
transport preferred

transport preferred

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

transport preferred {**telnet** | **none**}

Syntax Description

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.

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.

Default

Telnet

Command Mode

Line configuration

Usage Guidelines

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

Example

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

```
line vty 1
transport preferred telnet
```

Related Commands

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal transport preferred ††
transport input
transport outputt

txspeed

To set the terminal transmit baud rate (to terminal), use the **txspeed** line configuration command.

txspeed *bps*

Syntax Description

bps	Baud rate in bits per second (bps); see Table 4-5 for settings.

Default

9600 bps

Command Mode

Line configuration

Usage Guidelines

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 router will indicate if the speed you select is not supported. Use Table 4-5 as a guide for setting the line speeds.

Table 4-5 Router Line Speeds in Bits per Second

Router Model	Baud Rates
Cisco 7000, AGS+, CGS, MGS	50, 75, 110, 134, 150, 200, 300, 600, 1050, 1200, 2000, 2400, 4800, 9600, 19200, 38400
Cisco 2500 series, Cisco 3000, Cisco 4000 series	75, 110, 134, 150, 300, 600, 1200, 2000, 2400, 4800, 1800, 9600, 19200, 38400

Example

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

```
line aux 0
txspeed 2400
```

Related Commands

rxspeed
speed

vacant-message

To display an idle terminal message, use the **vacant-message** line configuration command. The command enables the banner to be displayed on the screen of an idle terminal. The **vacant-message** command without any arguments restores the default message. The **no vacant-message** command removes the default vacant message or any other vacant message that may have been set.

vacant-message [*d message d*]
no vacant-message

Syntax Description

d (Optional) A delimiting character of your choice—a pound sign (#), for example. You cannot use the delimiting character in the banner message.

message (Optional) Vacant terminal message.

Default

The format of the default vacant message is as follows:

```
<blank lines>
hostname tty# is now available
<blank lines>
Press RETURN to get started.
```

This message is generated by the system.

Command Mode

Line configuration

Usage Guidelines

Follow the command with one or more blank spaces and a delimiting character of your choice. Then enter one or more lines of text, terminating the message with the second occurrence of the delimiting character.

Note For a rotary group, you only need to define the message for the first line in the group.

Example

The following example turns on the system banner and displays this message:

```
line 0
vacant-message #
                Welcome to Cisco Systems, Inc.
                 Press Return to get started.
#
```

width

To set the terminal screen width, use the **width** line configuration command. This command sets the number of character columns displayed on the attached terminal.

width *characters*

Syntax Description

characters Integer that specifies the number of character columns displayed on the terminal.

Default

80 character columns

Command Mode

Line configuration

Usage Guidelines

The rlogin protocol uses the *characters* argument to set up terminal parameters on a remote host.

Some hosts can learn the values for both length and width specified with the **line** and **width** commands.

Example

The following example changes the character columns to 132 for the console terminal:

```
line console
location console terminal
width 132
```

Related Command

Two daggers (††) indicate that the command is documented in the *Cisco Access Connection Guide*.

terminal width ††