



Configuring Operating Characteristics for Terminals

Configuring the operating characteristics for terminals enables you to customize the settings for displays, formatting, and usability of the terminals on your network.

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Prerequisites for Configuring Operating Characteristics for Terminals

- You should have at least a basic familiarity with the Cisco IOS environment and the command-line interface.
- You should have at least a minimal configuration running on your system. You can create a basic configuration file using the **setup** command (see Using Setup Mode to Configure a Cisco Networking Device for details).

Restrictions for Configuring Operating Characteristics for Terminals

- Many of the Cisco IOS commands described in this document are available and function only in certain configuration modes on the router.
- Some of the Cisco IOS configuration commands are only available on certain router platforms, and the command syntax may vary on different platforms.

Information About Configuring Operating Characteristics for Terminals

Definition of the Escape Character and Other Key Sequences

You can define or modify the default keys used to execute functions for system escape, terminal activation, disconnect, and terminal pause. Generally, the keys used are actually combinations of keys, such as pressing the Control (Ctrl) key and another key (or keys) at the same time (such as Ctrl-^). Sequences of keys, such as pressing the Control key and another key, then pressing yet another key, are also sometimes used (for example Ctrl-^, x). However, in each case these keys are referred to as characters, because each key or combination of keys is represented by a single ASCII character. For a complete list of available ASCII characters and their decimal and keyboard equivalents, see the “ASCII Character Set” appendix of the Cisco IOS Configuration Fundamentals command Reference.

Specification of an International Character Display

The classic U.S. ASCII character set is limited to 7 bits (128 characters), which adequately represents most displays in the U.S. Most defaults on the modem router work best on a 7-bit path. However, international character sets and special symbol display can require an 8-bit wide path and other handling.

You can use a 7-bit character set (such as ASCII), or you can enable a full 8-bit international character set (such as ISO 8859). This allows special graphical and international characters for use in banners and prompts, and adds special characters such as software flow control. Character settings can be configured globally, per line, or locally at the user level. Use the following criteria for determining which configuration mode to use when you set this international character display:

- If a large number of connected terminals support nondefault ASCII bit settings, use the global configuration commands.
- If only a few of the connected terminals support nondefault ASCII bit settings, use line configuration commands or the EXEC local terminal setting commands.

**Note**

Setting the EXEC character width to an 8-bit character set can cause failures. If a user on a terminal that is sending parity enters the **help** command, an “unrecognized command” message appears because the system is reading all eight bits, although the eighth bit is not needed for **help**.

If you are using the **autoselect** function, the activation character should be set to the default Return, and the EXEC character bit should be set to 7. If you change these defaults, the application does not recognize the activation request.

Data Transparency for File Transfers

Data transparency enables the Cisco IOS software to pass data on a terminal connection without the data being interpreted as a control character.

During terminal operations, some characters are reserved for special functions. For example, the key combination Ctrl-Shift-6, X (^x) suspends a session. When transferring files over a terminal connection (using the Xmodem or Kermit protocols, for example), you must suspend the recognition of these special characters to allow a file transfer. This process is called *data transparency*.

You can set a line to act as a transparent pipe so that programs such as Kermit, Xmodem, and CrossTalk can download a file across a terminal line. To temporarily configure a line to act as a transparent pipe for file transfers, use the **terminaldownload** command in EXEC mode. The **terminaldownload** command is equivalent to using all the following commands:

- **terminal telnet transparent**
- **terminal no escape-character**
- **terminal no hold-character**
- **terminal no padding 0**
- **terminal no padding 128**
- **terminal parity none**
- **terminal databits**

Terminal Screen Length and Width

By default, the Cisco IOS software provides a screen display of 24 lines by 80 characters. You can change these values if they do not meet the requirements of your terminal. The screen values you set are passed during rsh and rlogin sessions.

The screen values set can be learned by some host systems that use this type of information in terminal negotiation. To disable pausing between screens of output, set the screen length to 0.

The screen length specified can be learned by remote hosts. For example, the rlogin protocol uses the screen length to set terminal parameters on a remote UNIX host. The width specified also can be learned by remote hosts.

Creation of Character and Packet Dispatch Sequences

The Cisco IOS software supports dispatch sequences and TCP state machines that send data packets only when they receive a defined character or sequence of characters. You can configure dispatch characters that allow packets to be buffered, then sent upon receipt of a character. You can configure a state machine that allows packets to be buffered, then sent upon receipt of a sequence of characters. This feature enables packet transmission when the user presses a function key, which is typically defined as a sequence of characters, such as Esc I C.

TCP state machines can control TCP processes with a set of predefined character sequences. The current state of the device determines what happens next, given an expected character sequence. The state-machine commands configure the server to search for and recognize a particular sequence of characters, then cycle through a set of states. The user defines these states--up to eight states can be defined. (Think of each state as a task that the server performs based on the assigned configuration commands and the type of character sequences received.)

The Cisco IOS software supports user-specified state machines for determining whether data from an asynchronous port should be sent to the network. This functionality extends the concept of the dispatch character and allows the equivalent of multicharacter dispatch strings.

Up to eight states can be configured for the state machine. Data packets are buffered until the appropriate character or sequence triggers the transmission. Delay and timer metrics allow for more efficient use of system resources. Characters defined in the TCP state machine take precedence over those defined for a dispatch character.

LPD Protocol Support on a Printer

The Cisco IOS software supports a subset of the Berkeley UNIX Line Printer Daemon (LPD) protocol used to send print jobs between UNIX systems. This subset of the LPD protocol permits the following:

- Improved status information
- Cancellation of print jobs
- Confirmation of printing and automatic retry for common print failures
- Use of standard UNIX software

The Cisco implementation of LPD permits you to configure a printer to allow several types of data to be sent as print jobs (for example, PostScript or raw text).

How to Configure Terminal Operating Characteristics