Using the Model 3395/3395A Terminal Server

SynOptics

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Preface

This manual describes how to use the Model 3395 Terminal Server on an local area network (LAN). It explains how to use terminal server commands, and how to tailor some terminal server characteristics to suit your needs. This manual is for people who want to use the terminal server to gain access to resources on the network, rather than the individual who installs and manages the terminal server hardware and software.

The network manager at your site decides how the network is set up and how much access you have to network resources. Because of this, your system may respond differently from what this manual indicates. Follow the instructions in this manual and use the descriptions as an example of what can happen in response to the commands described here.

Organization

This manual contains the following chapters:

Chapter 1   Describes the purpose of the Model 3395 Terminal Server in a local area network (LAN), and how to get started using terminal server commands.

Chapter 2   Describes the terminal server command interface and menu interface. This chapter describes how to use command-line editing keys, and how to use control keys for session management.

Chapter 3   Describes terminal server commands available at secure ports.

Chapter 4   Explains how to use a terminal during a TN3270 session.

Chapter 5   Explains the Multisessions (Dual Session Management) feature.

Chapter 6   Describes how to transfer files between personal computers and hosts through the terminal server.

Conventions

Throughout this manual, the word "Enter" means type something and then press the <New Line>, <Return>, or <Enter> key; for example, "Enter the CONNECT command" means type the word CONNECT and then press the <New Line>, <Return>, or <Enter> key.

This manual also uses the following conventions:

```
COMMAND REQUIRED [OPTIONAL] [optional]
```

Where	**Means**
COMMAND	You must enter the command, or its accepted abbreviation, as shown.
REQUIRED	You must enter a keyword, or its accepted abbreviation, as shown.
[OPTIONAL]	You have the option of entering this keyword or variable. Do not type the [*optional*] brackets; they only set off what is optional.

Additionally, this manual uses certain symbols in special ways:

Symbol	**Means**
TS3395>	This is the Model 3395 Terminal Server prompt at ports with the Secure and Nonprivileged privilege levels.
$	This is the Digital Equipment Corporation (DEC) VAX/VMS prompt.
%	This is the UNIX C shell prompt.

In examples, this manual uses

```
This typeface to show your entry and responses and screens from the
Model 3395 terminal server.
```

This typeface to show responses from remote hosts and devices on the network. This typeface also shows command keywords or arguments that are variable, such as "hostname."

Related Documentation

The following manuals provide information that you may find useful with this manual:

- *Software Management Guide for the Model 3395/3395A Terminal Server* (SynOptics part number 893-158-C)

  This manual describes the configuration, setup, and management of a terminal server software communications package, supplied by SynOptics Communications, Inc. This manual is written for network managers, and terminal server, UNIX, and VAX system managers.

- *Commands Reference for the Model 3395/3395A Terminal Server* (SynOptics part number 893-159-C)

  This manual describes how to use the Model 3395 Terminal Server software, including individual descriptions of each terminal server command. This manual is written for all terminal server users, although many commands can only be used by network managers or others with the appropriate privilege level.

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Chapter 1
Getting Started

The Model 3395/3395A Terminal Server is a combination of hardware and software that links users at serial devices, such as terminals, to resources on both local area networks (LANs) and wide area networks (WANs). These resources include a variety of hosts, workstations, and printers, as well as other SynOptics terminal servers. You can use a terminal server to gain access to any of these hosts on the network:

- UNIX hosts that support the TCP/IP protocol
- International Business Machines (IBM) hosts that have a Telnet server
- DEC VAX hosts running ULTRIX that support TCP/IP
- DEC VAX hosts that support the Local Area Transport (LAT) protocol

When a user such as the one shown in Figure 1-1 makes a connection to a LAN host through the terminal server, he can use all the resources on that host as if his terminal were directly attached to it.

UNIX host

VAX host

IBM host

Terminal Server Cards In
SynOptics Model 3000
Concentrator

Telnet
Server

**Ethernet Local Area
Network (LAN)**
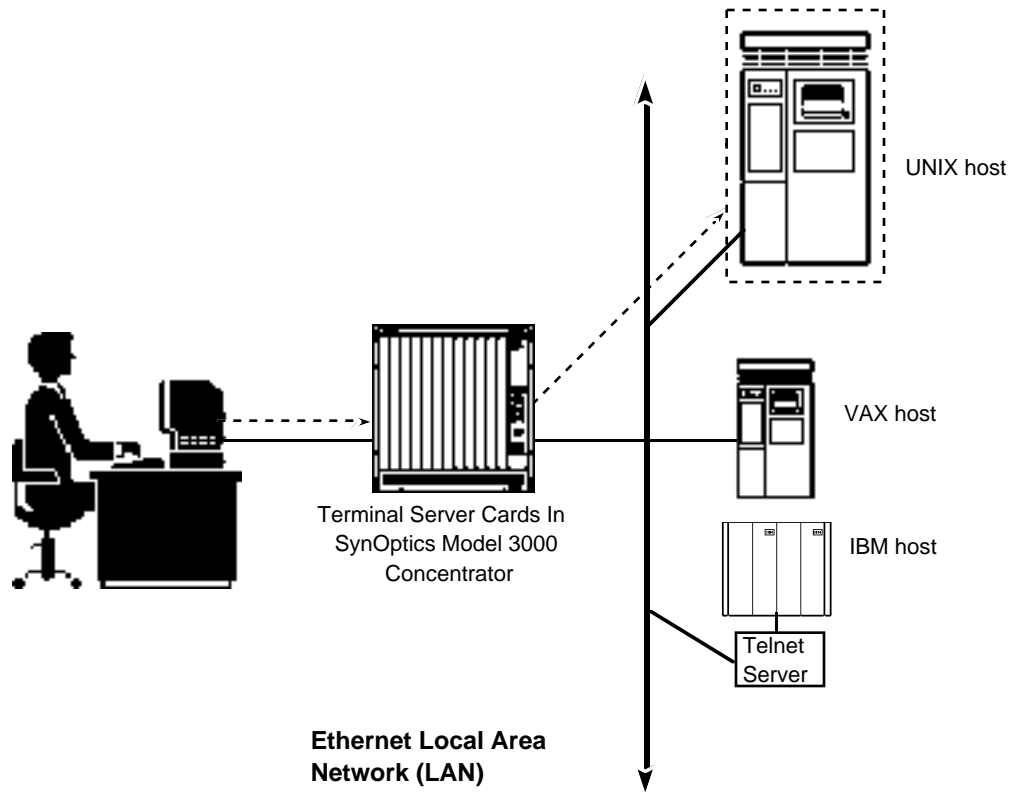
Figure 1-1.   Using the Model 3395/3395A Terminal Server

The user in Figure 1-1 has made a connection to the UNIX host on the LAN through the terminal server. He can now read databases, send mail, and run applications on this host. He can also connect to the VAX host, the IBM host, or a serial device on the other terminal server.

Expanding the Network with the Terminal Server

The terminal server can support a variety of devices, other than terminals. These include printers, modems, data switches, personal computers, and other host computers. These devices allow terminal server users to access LAN resources in many different ways, and provide additional resources to LAN users. Figure 1-2 shows an example of a Model 3395/3395A Terminal Server on the LAN, with several different devices connected to it.
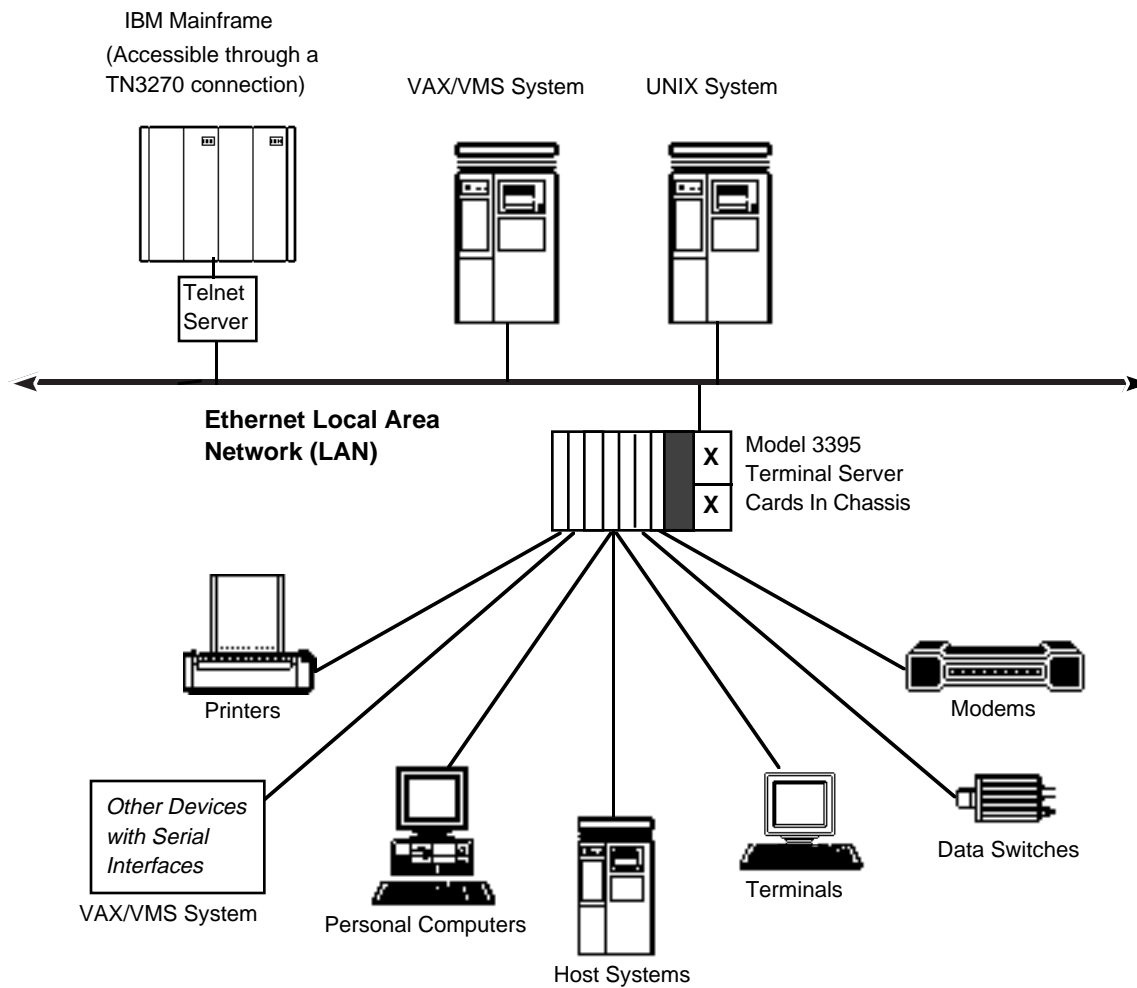
Figure 1-2.   A terminal server on an Ethernet LAN

In a network like the one in Figure 1-2, terminal server users can gain access to the hosts connected directly to the LAN. Users on the LAN hosts can reach the devices connected to the terminal server, such as the printer, the host system, or the personal computer.

The remaining sections of this chapter explain how you can use the terminal server in a network such as this one. These sections include the following topics:

- Using the terminal server

- Logging on to a terminal server port

- Managing sessions

- If you make a mistake

- Privilege levels

- Summary

Using the Terminal Server

When you log on to the terminal server you make a connection with a terminal server *port*. A port is the interface between a terminal and the other devices on the network, including hosts, printers, and other terminal servers. Each port has a set of characteristics and privileges that determine how you can use it. The network manager defines these characteristics and privileges with terminal server commands.

From the terminal server port, you can enter commands such as those described in Chapter 3 of this manual. While the privilege level and the characteristics of your port determine which commands you can use, most users can enter commands that do the following:

- Establish connections to devices on the network

- Display information about network destinations, and the characteristics of the terminal server port

- Modify some characteristics of the terminal server port

The Menu Interface

On some terminal servers, the network manager may have created a menu that overrides the terminal server's command interface. The menu displays choices that you can select to establish connections on the network, or change the configuration of your port. Chapter 2 describes the menu interface in more detail, but the information described here about logging on and off the port and establishing sessions will still be useful to you, even if you are using a menu.

Dedicated Services

The network manager can define a dedicated service at a terminal server port. If so, the terminal server automatically connects the port to a host on the network when you log on to the port. While you might not be able to use the terminal server commands in this manual if your port has a dedicated service, you can read this chapter for general information about the terminal server.

Logging On to a Terminal Server Port

If your terminal is connected directly to a terminal server port, press the <Return> key until one of the following prompts appears on the screen. If your terminal is connected to a host on the terminal server network, log off of the host, or suspend your current session by pressing the <Break> key or the local switch character. Then, press the <Return> key until one of these prompts appears and use the appropriate procedure:

Enter your login password and press the <Return> key. The default password on many terminal servers is ACCESS, but the network manager may have defined a different password for your terminal server. When you enter the correct password, the Enter username> prompt appears.

Enter username>   Enter your username and press the <Return> key. Your terminal server implementation may require specific usernames. If not, you can enter any username between 1 and 16 characters, or enter <Ctrl><Z> to automatically assign the username PORT_x at this port, where x is your port number. When you enter your username correctly, the TS3395> prompt appears.

TS3395>   This is the default local command prompt, and it means that you are logged on to a terminal server port. When you see this prompt, you can enter terminal server commands.

Note: These are the default prompts that the Model 3395/3395A Terminal Server includes with the terminal server software. The network manager can change these prompts, however, so the prompts on your terminal server may be different.

Kerberos Passwords

Kerberos is an Internet network authentication service that may exist on your terminal server. It requires that you enter a Kerberos password to gain access to the terminal server. The Kerberos password prompt appears after the Username> prompt in the Model 3395 Terminal Server login sequence, and looks like this:

    Enter user password>

If this or a similar prompt appears at your terminal, enter a Kerberos password.

Terminal Server Scripts

Some terminal server ports automatically execute a predefined set of terminal server commands called a script when you log on to the port. The script may prompt you for a password, change some characteristics of the port, or establish a connection with a host on the network. The information in this chapter will still be useful to you, however, even if your port automatically executes a script when you log on.

Managing Sessions

The connection between a terminal server port and a device on the network is called a *session*. You can establish a session with a LAT service, a Telnet host, an IBM host, or another terminal server after you log in to the terminal server port. The Model 3395/3395A Terminal Server allows you to open several sessions simultaneously, and move among them while you work. The next sections explain how to establish and manage sessions.

Establishing a Session

Several terminal server commands establish sessions with LAN destinations, but the one you will probably use most often is the CONNECT command. If you know the name or address of the device where you want to establish a session, simply enter it with the CONNECT command at the prompt and press the <Return> key:

```
TS3395> connect destination-name
```

If you are not sure of the names and addresses on your network, you can view a list of all the different destinations on the LAN with the SHOW DESTINATIONS command. (Some of the destinations in this list may be unavailable to you for security reasons. The network manager can tell you if this is the case.) When you enter the SHOW DESTINATIONS command, a list similar to the following appears on the terminal:

```
TS3395> show destinations

FINANCE.SUN.COM                      UNIX Host at 140.179.20.1

ACCOUNTSVAX                              VAX/VMS LAT SERVICE

PAYROLLHOST                              IBM Host

LASER2                              Department Laser Printer
```

The first column on the list shows the names you can use in connect commands to reach a service or a host. The second column displays information about each destination name, such as a description of a service or the Internet address of a Telnet domain. The information in the second column may or may not appear; the destination names in the first column are all you need to make a connection.

To establish a session with the Telnet host FINANCE.SUN.COM, for example, you could enter the CONNECT command like this:

```
TS3395> connect finance.sun.com

TS3395  -010-  Session 1 to FINANCE.SUN.COM established

    Welcome to Finance.SUN.COM

    Enter username:
```

You can also use the Internet address of a Telnet domain with the CONNECT command. Internet addresses usually appear next to the domain names in the SHOW DESTINATIONS display or the SHOW DOMAINS display.

Suspending a Session

When you suspend a session, you recall the Model 3395/3395A command interface without terminating the connection to the remote resource. Later, you can reopen the session and continue with your work. To suspend a session, press the Break key or the local switch character during the session. (A local switch character is a control character sequence that you or the network manager can define. Chapter 2 explains how to do this.) The TS3395> prompt appears, and you can enter any terminal server command, including the CONNECT command:

```
$   <BREAK>

TS3395>
```

The next sections show how to use the RESUME command to reopen a previously suspended session.

Using Session Numbers

Each time you establish a session, the terminal server software assigns it a *session number*. The session number appears in a display line right above the logon banner of the remote host. In the previous example, the session number for the connection to FINANCE.SUN.COM was 1:

```
TS3395  -010-  Session 1 to FINANCE.SUN.COM established
```

You can use session numbers with several terminal server commands when you switch among different sessions, view the status of sessions, and disconnect from sessions.

Establishing Multiple Sessions

The terminal server command interface allows you to establish two or more sessions simultaneously. You can then switch from one session to another without disconnecting from either of them. You can switch sessions with terminal server commands, or define session switching characters for this purpose. Most ports support up to four simultaneous sessions, and the network manager can enable a port to support up to sixteen simultaneous sessions.

To establish a second session, suspend the current session with the Break key or the local switch character and enter a connect command to establish the next session. You can then suspend that session and go back to the previous session. The SHOW SESSIONS command displays all of your active sessions and their session numbers. The display is similar to this one, for a user named Johnson, with three active sessions:

```
TS3395> show sessions

Port 12: Johnson          Service Mode      Current Session 2

- Session 1: Connected  Interactive      FINANCE.SUN.COM
- Session 2: Connected  Interactive      ACCOUNTSVAX
- Session 3: Connected  Interactive      PAYROLLHOST
```

To switch from session 2 at a LAT service to session 1 at FINANCE.SUN.COM, you could use a sequence like this with the RESUME command, beginning at the LAT service:

```
$

$ <BREAK> FINANCE.SUN.COM session 1 resumed
```

Disconnecting From a Session

You can disconnect from a session in two ways. If you are currently logged on to a host or service, enter the normal logoff command of the host or service. In this example, the user Johnson logs off of a UNIX host:

```
% logoff

JOHNSON logged out at 25-AUG-1993 16:00:21.12

TS3395 -012- Session 1 disconnected from FINANCE.SUN.COM

TS3395 -101- 2 other session(s) active

TS3395>
```

When the host or service accepts your logoff request, the terminal server terminates the session. It also displays a message that indicates if you still have active sessions.

If you are running the terminal server software because you have suspended a session, use the terminal server DISCONNECT command from the TS3395> prompt. Enter the session number with the command, and the terminal server will terminate the session:

```
TS3395> disconnect session 1

TS3395 -011- Session 1 disconnected from FINANCE.SUN.COM

TS3395 -101- 2 other session(s) active

TS3395>
```

Use the SHOW SESSIONS command to display active session numbers.

Using Other Terminal Server Commands

Many other terminal server commands are available to you, other than the session management commands described in this chapter. These include HELP, SET PORT, LOCK, and several others. HELP provides online information about all terminal server commands, SET PORT modifies the characteristics of your port, including the functions of control characters, and LOCK prevents other users from gaining access to your port while you are away. You enter all of these commands from the TS3395> prompt. Chapter 3 describes these and other commands in detail.

Using UNIX Aliases for Terminal Server Commands

The Model 3395 Terminal Server software provides several UNIX equivalents, or aliases, for Model 3395/3395A Terminal Server commands. If you work in a UNIX environment, you may want to use these aliases because they will be more familiar to you than the Model 3395/3395A commands. Instead of the terminal server HELP command, for example, you can enter the MAN command. Chapter 3 includes a description of the UNIX aliases for terminal server commands.

Logging Out of the Terminal Server Port

The terminal server LOGOUT command logs you out of the terminal server port. When you do this, the terminal server disconnects any sessions that are still active.

```
TS3395> logout

TS3395 -020- Logged out port 12 on server XFF4B15 at 22 September 1993
16:12:00
```

The log out message includes your port number and the name of the terminal server, as well as the date and time you logged off.

If You Make a Mistake

Do not be concerned if you make a mistake, such as a typing error, when you enter a command. The terminal server displays an error message and often some information that helps you correct the command. In any case, you can reenter the command correctly, or recall and edit the command line with the editing characters described in Chapter 2.

Privilege Levels

Privilege levels determine which terminal server commands you can use. The network manager can set the privilege level at each port to one of three levels:

- Secure
- Nonprivileged
- Privileged

All the commands in this manual are available at Secure ports.

The two other higher privilege levels, Nonprivileged and Privileged, allow users to enter system management commands, gain access to other users' ports, and alter the parameters in the terminal server database. The *Software Management Guide for the Model 3395/3395A Terminal Server* describes the Nonprivileged and Privileged levels in more detail, and *Commands Reference for the Model 3395/3395A Terminal Server* describes all the commands available to users with these privilege levels.

Summary

The Model 3395/3395A Terminal Server provides you with access to many resources on the network that might be unavailable to you otherwise. To use the terminal server, you log on to a terminal server port and establish sessions with hosts or other terminal server ports. You can suspend sessions and establish new sessions, so that you have several simultaneous connections. Terminal server privilege levels determine which commands and command options you can use at a terminal server port.

The remaining chapters of this book include information that helps you use the terminal server. These chapters include more details about the user interface, complete descriptions of the Secure level commands, how to use the Multisessions feature if your terminal supports it, information about TN3270 connections, and how to transfer files between a personal computer and a host through the terminal server.

<div align="right">

Chapter 2
The User Interface

</div>

This chapter describes how to use the terminal server command interface and the terminal server menu interface. It includes these topics:

- Entering commands

- Editing the command line

- Assigning session management functions to keyboard characters

- Session switching characters

- Telnet session management characters

- Using the terminal server menu

If your port has the Multisessions characteristic enabled, the user interface behaves somewhat differently than the way this chapter describes it. See Chapter 5, "Using Multisessions Feature," in addition to this chapter for information about entering commands and using session management control characters in a Multisessions environment.

Entering Commands

You enter commands at the terminal server prompt:

```
TS3395> COMMAND KEYWORD variable [KEYWORD variable]. . .[[KEYWORD]
variable]
```

Most terminal server commands allow you to enter two or more keywords and variables on the command line. If you do this, separate each characteristic with a space, a comma, or a combination of both. You can enter a command line that exceeds the line length of the screen as long as you do not press the <Return> key until the command line is complete. The maximum length of a command line is 132 characters.

Abbreviating Commands and Keywords

You can abbreviate many terminal server commands and keywords to the shortest unambiguous string of characters that the terminal server can interpret. For example, the CONNECT command begins with C, and C is the only character you need to enter the CONNECT command. You could also enter CON or CONNE. Each command description indicates whether or not you can abbreviate it. If so, the command description lists the minimal number of characters that you can enter to execute the command.

Editing the Command Line

You can change, correct, or edit the command line before you press the <Return> key, or recall previous command lines, with special keys and control characters. To use control characters, press the Control key and the second character simultaneously. Table 2-1 lists these editing keys and the control characters that come predefined with the terminal server software.

Users at Nonprivileged and Privileged ports can change the defaults for the editing characters with the SET PORT command, so the characters on your port may not have the same functions as the ones shown in Table 2-1. At most terminals, you can use the SHOW|LIST PORTS ALTERNATE CHARACTERISTICS command to check the control character sequences for the editing functions at your port.

Table 2-1.   Editing characters

Key Sequence	Function
<CTRL> <A>	Alternates between insert character mode and overstrike character. Overstrike mode is the default. This function does not apply to hardcopy terminals.
<CTRL> <B> or up arrow key ↑	Recalls the previous command.
<CTRL> <D> or left-arrow key ←	Moves the cursor one position to the left. This function does not apply to hardcopy terminals.
<CTRL> <E>	Moves the cursor to the end of the current command line. This function does not apply to hardcopy terminals.
<CTRL> <F> or right-arrow key →	Moves the cursor one position to the right. This function does not apply to hardcopy terminals.
<CTRL> <H>	Moves the cursor to the beginning of the command line. This function does not apply to hardcopy terminals.
<CTRL> <N> or down-arrow key ↓	Recalls the next command in the command history.
<CTRL> <R>	Redisplays the current command line. This command is useful after you have deleted characters on a hardcopy terminal.
<CTRL> <U>	Deletes all characters from the cursor position to the beginning of the command line.
<CTRL> <V>	Quotes the next character, so that the terminal server interprets it as a variable. (This function is useful if you want to redefine control characters.)
<CTRL> <X>	Deletes the current command line.
<CTRL> <Z>	Cancels an interactive operation, such as changing a password, or deletes the current command line.
<DELETE> or <backspace>	Deletes the character to the left of the cursor. On hardcopy terminals, the terminal server adds a backslash (\) to previously printed characters to indicate that you have deleted them.

The following example shows how to use the command line recall and editing features. Suppose that you enter the following command, which contains a typographical error:

```
TS3395> shw port characteristics
```

The terminal server would not accept the command because you spelled SHOW incorrectly. Instead of retyping the whole command line, however, you could use the up-arrow key or <CTRL><B> to recall the incorrect command and then edit it:

```
TS3395> ↑

TS3395> shw port characteristics
```

The cursor appears at the end of the command line. Next, type <CTRL><H> to move the cursor to the beginning of the command line. Press the right-arrow key (or type <CTRL><F>) so that the cursor is under the letter W in SHW. Type <CTRL><A> to enter insert mode, and then add the letter O to spell SHOW. Press the <Return> key to enter the correct command.

Assigning Session Management Functions to Keyboard Characters

The terminal server supports several session management functions that you can assign to character sequences with the SET PORT command. Two types of session management functions are available: general session switching and Telnet session management. Session management characters are very useful because you can gain access to them from within sessions, rather than entering the equivalent commands from the TS3395> prompt.

The terminal server has no predefined characters for session management, as it has for command line editing characters. Unless the network manager has already defined them for your port, you must define them yourself. The SHOW PORT CHARACTERISTICS command displays the current session management characters.

You can assign session management functions to individual characters, or to control character sequences, such as several of the editing characters. To use a character this way, you press the control key and the character simultaneously. When you assign session management functions to control character sequences, you can still use the individual character without the control character, such as in a text string. When you do, the terminal server does not execute the session management function.

You can assign session management functions to the alphabet characters (except I, J, and M), with or without the <Control> key, that do not already have editing functions assigned to them. Table 2-1 shows the default settings for the editing characters, and the SHOW PORT ALTERNATE CHARACTERISTICS command displays the current settings for the editing characters. Some other keyboard characters may be available for use as control characters, including these: [\ ] ^ _ ` { | } ~

This example shows how to assign the local switch function, which suspends an active session, to the <CTRL><L> sequence. Note that when you press the <Control> key at the TS3395> prompt, and then press another character, the <Control> key appears as ^ .

```
TS3395> set port local switch  ^l

TS3395>
```

The user at this port can now use <CTRL><L> to suspend an active session. Because this is a SET command, it takes effect immediately, but remains in effect only until you log off of the port.

Assigning a Local Switch Character

If your terminal or workstation does not have a Break key, you *must* define a local switch character to suspend a session. The Break key is the only predefined character that suspends a session. You can set the local switch character when you first log on to the port, before you establish any sessions. This way, you do not need to log off of a session to return to the terminal server local command prompt. See the previous section for an example of how to set the local switch character.

Using the Break Key

On most terminals, the Break key acts as a local switch character to suspend a session. Privileged and Nonprivileged users can change this setting of the Break key, however. The network manager can set the terminal server port to ignore the Break key during a session, or to send a break sequence to the local host during a session rather than the terminal server command interface. If you have questions about the behavior of the Break key on your terminal, see the network manager or ask a user at a Privileged port to change the port characteristic for this key.

Session Switching Characters

Session switching characters suspend the current session and resume other active sessions. You can use these keys in both Telnet and LAT sessions. Table 2-2 lists the keywords you use with the SET PORT commands to assign session switching functions to control characters.

Table 2-2.   Session switching functions

Keyword	Session Switching Function
BACKWARD SWITCH	Suspends the current session and reopens the next lower-numbered session. The function of this switch is similar to that of the BACKWARDS ommand.
FORWARD SWITCH	Suspends the current session and reopens the next higher-numbered session. The function of this switch is similar to that of the FORWARDS command.
LOCAL SWITCH	Suspends the current session and returns the local TS3395> command prompt. You must define this character to suspend a session if your terminal does not have a <Break> key.

See Chapter 3 for more information about how to use these keywords with the SET PORT command.

Telnet Session Management Characters

Telnet session management characters provide command line editing and process management during a Telnet session. Table 2-3 lists the keywords you use with the SET PORT commands to assign Telnet session management functions to control characters

Table 2-3.   Telnet session functions

Keyword	Telnet Session Function
TELNET ABORT	Stops a program from sending output to the terminal without terminating the program itself.
TELNET ATTENTION	Returns the session to the local operating system command prompt. If you press the Telnet Attention key during a Telnet session at a Model 3395/3395A Terminal Server, the remote terminal server port passes the break request to the host or device where it is connected. (This also happens in any session if you press the <Break> key when the PORT BREAK characteristic is set to REMOTE.)
TELNET ERASE CHARACTER	Deletes the character to the left of the cursor.
TELNET ERASE LINE	Deletes all data to the left of the cursor in the current line.
TELNET INTERRUPT	Suspends, interrupts, or aborts a user process.
TELNET QUERY	Requests that the Telnet host or port send a signal to the terminal that indicates it is still up and running.
TELNET SYNCHRONIZE	Regains control of a process that is no longer executing properly.

See Chapter 3 for more information about how to use these keywords with the SET PORT commands.

Using the Terminal Server Menu

The Model 3395/3395A Terminal Server software running on your terminal server may have a menu interface rather than a command interface. You will know this if a menu appears on your screen rather than the TS3395> prompt when you log on to the terminal server port. You see a menu similar to the one in Figure 2-1.

```
              Welcome to the Model 3395 Terminal Server



      1. Connect to FINANCEVAX
      2. Connect to UNIXSUN
      3. Connect to LOCALVAX



      7. Show Queue
      8. Lock Terminal
      9. Change Mode - Binary
     10. Change Mode Interactive            20. Logout


     Enter number of selection>
```

Figure 2-1.   A terminal server menu

One or more options appear on the menu, preceded by a number. To select an option, enter the number corresponding to the option at the prompt and press the <Return> key. This method of selecting an option works whether your port's TYPE characteristic is set to HARDCOPY, SOFTCOPY, or ANSI. For example, you could select the Connect to FINANCEVAX option in Figure 2-1 like this:

```
    Enter number of selection> 1
```

When you make the selection, the terminal server executes the appropriate command. When you suspend a session, or execute a terminal server command, the menu does not reappear on your screen until you press the <Return> key.

If the TYPE characteristic at your port is set to ANSI, you can also use the arrow keys to position the cursor on the option you want, and then press the <Return> key. The SHOW PORT CHARACTERISTIC display includes the port's TYPE characteristic.

Chapter 3
Using Model 3395/3395A Terminal Server Commands

This chapter describes the commands you can use at Secure ports. These commands establish sessions, display information about LAN destinations, sessions, and services, and allow you to specify some characteristics of your own port. Some commands have options that are available only at Nonprivileged or Privileged ports, and the command descriptions indicate this. For more information about commands available at Nonprivileged and Privileged ports, see *Commands Reference for the Model 3395/3395A Terminal Server.*

In addition to the command descriptions, this chapter includes information about these topics:

• Viewing and changing information in the terminal server databases

• Using UNIX aliases for terminal server commands

These are the commands in this chapter:

BACKWARDS
CONNECT
DISCONNECT
FORWARDS
HELP
LAT CONNECT
LOCK
LOGOUT PORT
RESUME
RLOGIN
SCRIPT
SET PORT
SET SESSION
SHOW DESTINATIONS
SHOW|LIST DOMAIN
SHOW NODES
SHOW|LIST PORT
SHOW|LIST SERVICES
SHOW SESSIONS
TELNET CONNECT
XCONNECT
ZERO COUNTERS

Viewing and Changing Information in the Terminal Server Databases

The terminal server maintains two files of data, or databases, that contain information about the terminal server and the devices you can reach on the network. One is the *operational* database and other is the *permanent* database. Information in the operational database is temporary, and remains current only until you log out of your terminal server port. While it is current, it overrides the information in the permanent database. You change information in the operation database with SET commands. Information in the permanent database is constant, and remains constant unless you or the network manager change it with a DEFINE command and you log out of your port, or the network manager initializes the terminal server.

Using the SHOW|LIST Commands

The SHOW commands display information in the terminal server's operational database. The LIST commands display information in the terminal server's permanent database. Information in the SHOW displays reflect the most current information about your port and the destinations you can reach on the LAN.

Using UNIX Aliases for Terminal Server Commands

If you are accustomed to the UNIX operating system, the Model 3395/3395A Terminal Server offers several UNIX equivalents of frequently used Model 3395/3395A commands. You can enter these equivalents, or aliases, at the TS3395> prompt just as you would enter the Model 3395/3395A commands to produce the same results. Table 3-1 shows the UNIX aliases for Model 3395/3395A commands.

Table 3-1.   UNIX aliases for Model 3395/3395A commands

Model 3395/3395A Command	UNIX Alias
SHOW PORT STATUS [*port-list*]	STATUS [*port-list*]
RESUME session number	FG *session-number*
HELP	MAN
SHOW SESSIONS	JOBS
DISCONNECT [*session*]	CLOSE or KILL [*session*]
TELNET CONNECT [*domain-name*] [*internet-address*]	OPEN [*domain-name*] [*internet-address*]
LOGOUT [PORT *port-list*]	QUIT [*port-list*]

Each command description includes the UNIX alias, if one exists, in the Notes section.

BACKWARDS
   Reopen the next available lower-numbered session

The BACKWARDS command reopens the next available, lower-numbered session already established at your port. Use the SHOW SESSIONS command to display information about active sessions, including their session numbers.

Notes

The terminal server assigns a number to each session you establish. The server records these session numbers in a rotating list for use by the FORWARDS and BACKWARDS commands. Therefore, when the lowest-numbered session is current, using the BACKWARDS command reopens the highest-numbered session. When only one session is active at a port, the BACKWARDS command reopens that session.

In a Multisessions environment, the BACKWARDS command reopens the next lower-numbered session that does not already appear in a window. See Chapter 5 for more information about how the MULTISESSIONS characteristic affects the BACKWARDS command.

If you have defined a backward switch character, you can reopen the next available lower-numbered session from within the current session, rather than from the terminal server command interface. See Chapter 2 and the SET PORT command in this chapter for more information about the backward switch character.

Syntax

```
BACKWARDS
```

Abbreviation

```
B
```

Example

A user whose current session is session 2, enters the BACKWARDS command to reopen session 1. First, the user enters the SHOW SESSIONS command to display all active sessions, and check the number of the current session.

```
TS3395> show sessions

Port 12: charlie        Service Mode      Current Session 2

- Session 1: Connected    Interactive      FINANCE.SUN.COM

- Session 2: Connected    Interactive      PAYROLLVAX

- Session 3: Connected    Interactive      UNIX.HOST.COM
```

The display shows that session 2 is current. Now the user reopens session 1.

```
TS3395> backwards

TS3395 -012- FINANCE.SUN.COM session 1 resumed
```

The user's current session is now session 1. If this user suspended session 1 and entered the BACKWARDS command again, the terminal server would reopen session 3 at UNIX.HOST.COM, because session 3 is next on the rotating list.

Related Commands

These commands provide functions that are useful with or similar to the BACKWARDS command:

Command	Function
SHOW SESSIONS	Displays a list of active sessions and their session numbers at your port.
FORWARDS	Reopens the next higher-numbered session.
RESUME	Reopens the session that you specify in the command line, or the previous session.

CONNECT
   Establish a session with a resource on the network

The CONNECT command establishes a session with a Telnet destination or a LAT service. Use the SHOW DESTINATIONS command to obtain a list of LAT service names and Telnet destination names on the network.

Notes

TELNET CONNECTIONS: The terminal server may take a few seconds to establish a Telnet connection to a domain name after it has been initialized. During this time, the server is attempting to locate the Domain Name Server, look up the Internet address for the domain name, and then make the connection. Subsequent attempts to connect to that Telnet host occur without delay, because the terminal server has a record of the Telnet address for that domain name.

TN3270 CONNECTIONS: You can use an Internet address or a domain name to reach an IBM host and establish a TN3270 session. Once you make the connection, your terminal emulates an IBM 3270 display station. See Chapter 4 for more information about TN3270 terminal emulation.

LAT CONNECTIONS: LAT services can exist at more than one LAT service node, or terminal server port. The *node-name* and *port-name* variables allow you to specify a service node or port when this is the case. If a LAT service exists at more than one service node or port and you do not specify one in the CONNECT command, the terminal server makes a connection based on which has the highest rating. This rating indicates the ability of the node or port to support additional connections.

Some LAT services may require that you supply a password before you can use them. If a LAT service requires a password, the terminal server prompts you for it after you enter the CONNECT command. Enter the password and press the <Return> key. Check with the network manager if you have questions about the password for a LAT service. See the Examples section of this command description for an example of a LAT service with password protection.

LAT services allow a limited number of connections from terminal server ports. When the number of connections to a service has reached the maximum amount, additional connection requests are placed in a queue if one is enabled. If you request a connection to a service, and the service does not respond, it may already have the maximum number of terminal server connections or it may be unavailable.

PREFERRED SERVICES: If you enter the CONNECT command without a destination, the terminal server searches for a predefined preferred LAT service or a preferred Telnet destination. Preferred services are defined by the network manager, but you can check to see if a preferred service has been defined for your port with the SHOW|LIST PORTS CHARACTERISTICS command.

Syntax

```
CONNECT   [domain-name[:telnet-port-number]]
          [internet-address[:telnet-port-number]]
          [[SERVICE] service-name]  [NODE node-name]
          [DESTINATION port-name]
```

Abbreviation

```
C   [SERV]  [NOD]  [DEST]
```

Where	Means
domain-name	Establish a session with the Telnet host you specify in this variable. A domain name may contain up to four segments, separated by a period.
internet-address	Establish a session with the destination at the Internet address you specify in this variable. An Internet address consists of four numbers, separated by a period.
:telnet-port-number	Establish a session using the number of an Internet protocol or the port number you specify in this variable. Precede the port number with a colon (:) to separate it from the domain name or the Internet address. Valid port numbers are the whole numbers 1 through 32767.
service-name	Establish a session with the LAT service you specify in this variable. A service name can consist of 1 through 16 characters.
NODE	Establish a session with the LAT server at the node you specify in the *node-name* variable. Use this keyword when the LAT service you in the *service-name* variable is offered at more than one node, and you want to specify the node.
node-name	Establish a session with the LAT service at the node you specify in this variable. A node name can consist of 1 through 16 ASCII characters.
DESTINATION	Establish a session with the LAT service at the remote port you specify in the variable. Use this keyword when the LAT service you specified in the *service-name* variable is offered at a port on another terminal server, and you want to specify that port.
port-name	Establish a session with the LAT service at the port you specify in this variable. A port name can consist of 1 through 16 ASCII characters. The default name for a port on a Model 3395/3395A Terminal Server has the form PORT_*x*, where *x* is the number of the physical terminal server port (1 through 16).

Examples of Telnet Connections

1. This command uses the Telnet domain name FINANCESUN.SYNOPTICS.COM.

   ```
   TS3395>  connect financesun.synoptics.com
   TS3395 -010- Session 5 to FINANCESUN.SYNOPTICS.COM
   established
     You have reached FINANCESUN.SYNOPTICS.COM
     Enter your username/password pair
     Username:
   ```

2. This command uses the Internet address 128.10.2.30 and the Telnet port number 23.

   ```
   TS3395>  connect 128.10.2.30:23
   TS3395 -010- Session 6 to 128.10.2.30:23 established
     Welcome to DevelopmentSUN
     Please log on.
   ```

Example of a TN3270 Connection

This command uses a Telnet domain name to reach an IBM host. Once the connection is established, the user's terminal emulates an IBM 3270 display station, and the terminal's keyboard responds like an IBM keyboard.

```
TS3395>  connect ibmhost.com
TS3395  -010-  Session 3 to IBMHOST.COM established
  This is IBMhost.COM
  Username:
```

Examples of LAT connections

1. This command establishes a session with a LAT service named FINANCEVAX, which requires a password. The password does not echo on the screen when the user enters it.

   ```
   TS3395>  connect financevax
   Password> xxxxxxx
   TS3395  -010-  Session 1 to FINANCEVAX established
     Welcome To FINANCEVAX
     Please log on.
   ```

2. This command uses the LAT service name ACCOUNTSVAX and the LAT node name VAX1.

```
TS3395>  connect accountsvax node vax1

TS3395  -010-  Session 2 to ACCOUNTSVAX established

Welcome to ACCOUNTSVAX

  Please log on.
```

3. This command uses the LAT service name LASER, which is offered at terminal server port 2 on the node named TAX9000.

```
TS3395>  connect laser node tax9000 destination port_2

TS3395  -010-  Session 3 to LASER established

Username>
```

Example of a Preferred Service

This CONNECT command has no destination name or Internet address. The terminal server searches for a predefined LAT preferred service or preferred Telnet destination. In this example, the preferred service is a LAT host named ACCOUNTSHOST.

```
TS3395>  connect

TS3395  -010-  Session 4 to ACCOUNTSHOST established

 This is ACCOUNTSHOST

 Please enter your username:
```

If the preferred service had not been defined, the message *Preferred service has not been defined* would have appeared at the user's terminal. If this happens to you, see the network manager, or enter a LAT service name or Telnet domain name with the CONNECT command.

Related Commands

These commands provide functions that are useful with or similar to the CONNECT command:

Command	Function
SHOW DESTINATIONS	Displays a list of LAT services and Telnet destinations.
SHOW DOMAIN	Displays a list of learned and static Telnet destinations on the network.
SHOW NODES	Displays a list of LAT service nodes.
SHOW SERVICES	Displays a list of LAT services.
TELNET CONNECT	Establishes a session with a Telnet destination.
LAT CONNECT	Establishes a session with a LAT service.
RLOGIN	Establishes a session with a host that has been configured for an RLOGIN implementation.
DISCONNECT	Terminates a session between the terminal server port and a device on the LAN.

DISCONNECT
Terminate one or all active sessions at your port

The DISCONNECT command terminates one or more active sessions. The SHOW SESSIONS display includes the numbers of active sessions at your port, which you can use with the DISCONNECT command.

Notes

Users at Secure ports can terminate sessions only at their own ports.

```
UNIX Alias:      CLOSE/KILL [session-number]
```

Syntax

```
DISCONNECT [SESSION session-number] [ALL]
```

Abbreviation

```
DI  [S]
```

Where	Means
SESSION DISCONNECT	Terminate the session in the *session-number* variable. You can also enter the command without keywords or variables to terminate the current session.
session- number	Terminate the session you specify in this variable.
ALL	Terminate all active sessions at this port.

Example

This command terminates session 1.

```
TS3395> disconnect session 1

TS3395 - 011- Session 1 disconnected from FinanceSUN.COM
```

Related Commands

This command provides information that is useful with the DISCONNECT command:

Command	Function
SHOW SESSIONS	Displays the active sessions and their session numbers at your port.

FORWARDS
    Reopen the next available higher-numbered session

The FORWARDS command reopens the next available higher-numbered session already established at your port. Use the SHOW SESSIONS command to display information about active sessions, including their session numbers.

Notes

The terminal server assigns a number to each session you establish. The server records these session numbers in a rotating list for use by the FORWARDS and BACKWARDS commands. Therefore, when the highest-numbered session is current, using the FORWARDS command reopens the lowest-numbered session. When only one session is active at a port, the FORWARDS command reopens that session.

In a Multisessions environment, the FORWARDS command reopens the next higher-numbered session that does not already appear in a window. See Chapter 5 for more information about how the MULTISESSIONS characteristic affects the FORWARDS command.

If you have defined a Forward Switch character, you can reopen the next available higher-numbered session from within the current session, rather than from the terminal server command interface. See Chapter 2 and the SET PORT command in this chapter for more information about the Forward Switch character.

Syntax

```
FORWARDS
```

Abbreviation

```
F
```

Example

A user whose current session is session 2 enters the FORWARDS command to reopen session 3. First, the user enters the SHOW SESSIONS command to display all active sessions, and check the number of the current session.

```
TS3395> show sessions

Port 11: lynne          Service Mode     Current Session 2

- Session 1: Connected    Interactive      FINANCE.SUN.COM

- Session 2: Connected    Interactive      PAYROLLVAX

- Session 3: Connected    Interactive      UNIX.HOST.COM
```

The display shows that session 2 is current. Now the user reopens session 3.

```
TS3395> forwards

TS3395 -011- UNIX.HOST.COM session 3 resumed
```

The user's current session is now session 3. If this user suspended session 3 and entered the FORWARDS command again, the terminal server would reopen session 1 at FINANCE.SUN.COM, because session 1 is next on the rotating list.

Related Commands

These commands provide functions that are useful with or similar to the FORWARDS command:

Command	Function
SHOW SESSIONS	Displays a list of active sessions and their session numbers at your port.
BACKWARDS	Reopens the next lower-numbered session.
RESUME	Reopens the session that you specify in the command line, or the previous session.

HELP
   Display online information about commands and keywords

The HELP command displays online information about the commands and keywords you specify. This information includes a description of the command and a summary of command options.

Notes

The terminal server displays information about terminal server commands according to the privilege level of the port. If the port is Secure, for example, the terminal server displays only the commands that a Secure port accepts.

Terminal servers with limited memory display the command syntax only. All other terminal servers display the syntax and other information about the command.

For security reasons, the network manager may disable the HELP command on the terminal server, so it may not be available for use at your port.

```
UNIX alias:     MAN
```

Syntax

```
HELP [INTRODUCTION] [topic] [subtopic(s)]
```

Abbreviation

```
H   [INT]
```

Where	Means
INTRO- DUCTION	Display the help introduction. If you do not enter this keyword, the terminal server displays a list of topics.
topic and in these variables.	Display information about the commands and keywords you specify SUB-TOPIC

Example

A user enters the HELP command, selects the SHOW command as the topic, and then selects the keyword USERS as the subtopic. This example shows the extended help screen for the command. A terminal server with limited memory would display only the command syntax.

```
TS3395> help
Display information on commands and their parameters.
        HELP [command [keyword [keyword [keyword]]]]
"Keyword" is one or more of the command's parameter
keywords.
New users type:

        HELP INTRODUCTION

    "Command" is one of:
BACKWARDS               BROADCAST               CLIENT SELECTION
CONNECT                 CLOSE                   DEFINE
DISCONNECT              FG                      FORWARDS
JOBS                    KILL                    Introduction
LIST                    LOCK                    LOGOUT
OPEN                    QUIT                    RESUME
RLOGIN                  SCRIPT                  SET
SETUP                   XPRINTER                SHOW
STATUS                  TELNET                  TEST
ULI                     WHO                     XCONNECT
ZERO COUNTERS


Enter <CTRL/Z> to exit HELP or press <RETURN> to continue.
Topic? show
  Display information from the operational data base.
  More HELP available for:
    PORTS                   SERVICES                SESSIONS
SHOW Subtopic? services
Display service information from the operational database.
        SHOW SERVICES [services] [info]
    "Services" is ALL (the default), LOCAL, or a service
name.  The service name may contain a single wildcard "*"
symbol.  All services matching the given name will be
displayed.
    "Info" is the type of information:  CHARACTERISTICS,
STATUS, or SUMMARY (the default).
SHOW Subtopic? ^Z
TS3395>
```

Related Commands

Use the HELP command to obtain information about other terminal server commands.

LAT CONNECT
    Establish a session with a LAT service

The LAT CONNECT command establishes a session with a LAT service. Use the SHOW SERVICES or SHOW NODES commands to obtain a list of LAT service names on the network.

Notes

Some networks may include a LAT service and a Telnet domain with the same name. The LAT CONNECT command selects the LAT service rather than the Telnet domain if you include only the name in the command line. If you enter the LAT CONNECT command without a service name, the terminal server searches for a predefined preferred LAT service. Preferred services are defined by the network manager, but you can check to see if a preferred service has been defined for your port with the SHOW|LIST PORTS CHARACTERISTICS command.

LAT services can exist at more than one LAT service node, or terminal server port. The *node-name* and *port-name* variables allow you to specify a service node and port when this is the case. If a LAT service exists at more than one service node or port and you do not specify one in the LAT CONNECT command, the terminal server makes a connection based on which node has the highest rating. This rating indicates the ability of the node or port to support additional connections.

Some LAT services may require that you supply a password before you can use them. If a LAT service requires a password, the terminal server prompts you for it after you enter the LAT CONNECT command. Check with the network manager if you have questions about the password for a LAT service. See the Examples section of this command description for an example of a LAT service with password protection.

LAT services allow a limited number of connections from terminal server ports. When the number of connections to a service has reached the maximum amount, additional connection requests are placed in a queue if one is enabled. If you request a connection to a service, and the service does not respond, it may already have the maximum number of connections or it may be unavailable.

Syntax

```
LAT CONNECT [[SERVICE] service-name]  [NODE node-name]
[DESTINATION port-name]
```

Abbreviation

```
LAT C [SERV]  [NOD]  [DEST]
```

Where	Means
SERVICE	Establish a session with the LAT service in the *service-name* variable. This keyword is optional.
service-name	Establish a session with the LAT service you specify in this variable. A service name can consist of 1 through 16 characters.
NODE	Establish a session with the device, or node, on the LAN that you specify in the *node-name* variable. Use this keyword when the LAT service you specified in the *service-name* variable is offered at more than one node, and you want to specify the node.
node-name	Establish a session with the LAT service at the node you specify in this variable. A node name can consist of 1 through 16 ASCII characters.
DESTINATION	Establish a session with a device connected to the port you specify in the *port-name* variable. Use this keyword when the LAT service you specified in the *service-name* variable is offered on a device connected to a port on another terminal server, and you want to specify that port.
port-name	Establish a session with the LAT service at the device connected to the port you specify in this variable. A port name can consist of 1 through 16 ASCII characters. The default name for a port on a Model 3395/3395A Terminal Server has the form PORT_*x*, where *x* is the number of the physical terminal server port (1 through 16).

Examples

1. This command uses the LAT service named FINANCEVAX, which requires a password. The password does not appear on the screen when the user enters it.

```
TS3395> lat connect financevax

Password> xxxxx

TS3395  -010-  Session 1 to FINANCEVAX established

Welcome To FINANCEVAX

Please log on.
```

2. This command uses the LAT service name ACCOUNTSVAX, which exists on the LAT node named VAX1.

```
TS3395>  lat connect accountsvax node vax1

TS3395  -010-  Session 4 to ACCOUNTSVAX established

Welcome to ACCOUNTSVAX

Username:
```

3. This command uses the LAT service name LASER, which exists on terminal server port 2 on the node named VAX1.

```
TS3395> lat connect lasernode vax1 destination port_2

TS3395  -010-  Session 5 to LASER established

You have reached LASER

Username:
```

4. This command does not use a service name. In the absence of this information, the command interface searches for a predefined LAT preferred service. In this example, the preferred service is a LAT host named ACCOUNTSHOST.

```
TS3395> lat connect

This is ACCOUNTSHOST

Please enter your username:
```

If the preferred service had not been defined, the message *Preferred service has not been defined* would have appeared on the screen. If this happens to you, see your network manager, or enter a LAT service name with the LAT CONNECT command.

Related Commands

These commands provide functions that are useful with or similar to the LAT CONNECT command:

Command	Function
SHOW DESTINATIONS	Displays a list of all LAT services and Telnet destinations on the network.
SHOW NODES	Displays a list of LAT service nodes on the network.
SHOW SERVICES	Displays a list of available LAT services on the network.
CONNECT	Establishes a session with a LAT service or a Telnet destination.
DISCONNECT	Terminates a session between your port and a LAT service or a Telnet destination.

LOCK
Temporarily disable access to a terminal server port

The LOCK command disables access to a terminal server port without terminating active sessions or logging out the port. The interface prompts you for a password before it locks the port. You use this password to "unlock" the port when you want to regain access to it.

Notes

Locking your port prevents other users from establishing sessions and gaining access to network resources through it if you are away. If you are at a privileged port, locking your port prevents other users from entering commands that are not available through Secure ports.

If you forget the unlock password, a user at a Privileged port must log out your port before you can use it again, although this terminates any active sessions.

The SERVER LOCK characteristic must be enabled to use the LOCK command. See the network manager if you cannot use this command.

Syntax

```
LOCK
```

Abbreviation

```
LOC
```

Example

```
TS3395> lock

Lock Password>xxxxx
```

When you enter the LOCK command, the interface prompts you for a Lock Password. Choose a password that you can remember, because you will use it later to unlock the port. The password do not appear on the screen. After the you enter the Lock Password, the interface prompts you to enter it again, to verify its contents.

```
Verification>xxxxx
```

After the interface verifies the password, it displays a message indicating that the port is locked, and the Unlock Password prompt:

```
TS3395 - 019 - Port 6 locked

Unlock Password>
```

Enter the Lock Password at the Unlock Password> prompt to regain access to the port.

Related Commands

When a port is locked, you cannot enter commands.

LOGOUT PORT
   Log out of the terminal server port

The LOGOUT PORT command logs you out of the terminal server port, and terminates any active sessions.

Notes

Users at Secure ports can only log out of their own port.

UNIX alias: QUIT [*port-list*]

Syntax

LOGOUT [PORT]   [*port-list*]

Abbreviation

LOG [PO]

Where   Means

port-list   Log out of the port in this variable. Users at Secure ports can only specify their own port number. This variable is optional. You can simply enter LOGOUT to log out of your port.

Example

TS3395> logout

TS3395 –20– Logged out port 12 on server X003E8C at 13 March 1991 11:15:23

The logout message on your terminal server may be different. It usually includes the port number and the date as well as the name of the terminal server.

Related Commands

Use the LOGOUT command when you are finished using the terminal server.

RESUME
    Reopen an active session

The RESUME command reopens a session that you specify in the command line, or the current session. Use the SHOW SESSIONS command to obtain a list of active sessions and their session numbers.

Notes

If you enter the RESUME command without specifying a session, the terminal server reopens the current session. If you enter the RESUME command within a Multisessions window, the terminal server reopens the current session established in that window. To reopen a session that you established in another window, you must enter a session number.

When you reopen a session, you need to press the return key once or twice to obtain the local operating system prompt.

```
UNIX alias:   FG session-number
              domain-name
              internet-address
```

Syntax

```
RESUME [[SESSION] session number|service-name|domain-
name|internet-address]
```

Abbreviation

```
R    [SES]
```

Where	Means
session- number	Reopen the session you specify in this variable.
service- name	Reopen a session at the LAT service you specify in this variable.
domain- name	Reopen a session with the Telnet domain you specify in this name variable. A domain name may contain up to four segments, each separated by a period.
internet- address	Reopen a session with the Telnet host or terminal server at the Internet address you specify in this variable. Internet addresses consist of four numbers, separated by periods.

Examples

1. This command reopens a session using a session number.

   ```
   TS3395> resume session 3
   ```

2. This command reopens a session using a LAT service name.

   ```
   TS3395> resume financevax
   ```

3. This command reopens a session using an Internet address.

   ```
   TS3395> resume 140.178.65.119
   ```

Related Commands

These commands provide functions that are useful with or similar to the RESUME command:

Command	Function
SHOW SESSIONS	Displays a list of active sessions and their session numbers.
FORWARDS	Reopens the next higher-numbered session.
BACKWARDS	Reopens the next lower-numbered session.

RLOGIN
Log on to a host through the terminal server command interface

The RLOGIN command allows you to log on to a host through the terminal server. To do this, the terminal server passes a username for the remote host or a username for a remote terminal server port from the RLOGIN command line.

Notes

A network manager can implement the RLOGIN function on a host in different ways. Some implementations allow you to specify a username with the RLOGIN command and bypass the login routine on the host. Other implementations may function differently. Check with the network manager if you have questions about which keywords and variables to enter with the RLOGIN command.

The terminal server may take a few seconds to establish a Telnet connection to a domain name after it has been initialized. During this time, the server is attempting to locate the Domain Name Server, look up the Internet address for the domain name, and then make the connection. Subsequent attempts to connect to that Telnet host occur without delay, because the terminal server has a record of the Telnet address for that domain name.

Syntax

```
RLOGIN    domain-name  [[USERNAME] "username"]
          internet-address  [[USERNAME] "username""
          NONE
```

Abbreviation

```
RL   [U]
```

Where	Means
domain-name	Establish a session with the Telnet host you specify in this variable. Domain names may contain up to four segments, separated by a period.
internet address	Establish a session with the Telnet host at the Internet address you specify in this variable. An Internet address consists of four numbers, separated by a period.
"username"	Pass the character string that you specify in this variable to the remote host as a logon name, or username. Enclose the username in quotes.
NONE	Establish a session with a predefined preferred Telnet destination. Preferred destinations are defined by the network manager.

Examples

1. This command has no host username for the host UNIXSUN. The terminal server uses the port username to log on to the host.

   ```
   TS3395>  rlogin unixsun

   TS3395  -010-  Session 1 to UNIXSUN established

   $
   ```

   The shell prompt on UNIXSUN indicates that the RLOGIN request was successful. The response you see may be different.

2. This command uses the host name UNIXSUN and the username Johnson.

   ```
   TS3395>  rlogin unixsun "johnson"

   TS3395  -010-  Session 2 to UNIXSUN established

   $
   ```

   The shell prompt on UNIXSUN indicates that the RLOGIN attempt was successful.

3. This command uses the NONE keyword to connect to a preferred service. The terminal server passes the username of the terminal server port to the remote host.

   ```
   TS3395> rlogin none

   TS3395  -010-  Session 3 to UNIXSUN established

   $
   ```

   The shell prompt on the remote host indicates that the RLOGIN attempt was successful.

Related Commands

These commands provide functions that are useful with or similar to the RLOGIN command:

Command	Function
CONNECT	Establishes a session with a Telnet destination, including a UNIX host, or a LAT service.
TELNET CONNECT	Establishes a session with a Telnet destination, including a UNIX host.
SHOW DOMAIN	Displays a list of learned or static domain names.

SCRIPT
   Execute a script file

The SCRIPT command locates a script file and executes the commands in the script file.

Notes

Script files reside on a host system and contain a collection of Model 3395/3395A Terminal Server commands. You or the network manager can create these scripts with the host's text editor if you have the appropriate privileges on the host. You can execute a script file with the SCRIPT command, or the network manager can specify that the terminal server execute a script automatically when you log on to a port.

Once you execute a script, you cannot stop it. The session switching characters and the <Break> key do not function while a script is executing.

Syntax

```
SCRIPT      "/pathname/script-name"
```

Abbreviation

```
None
```

Where   **Means**

"*/pathname/*   Execute the script file you specify in the *script-name* portion of the
script-name"   variable at the location you specify in the *pathname* portion of the variable. Include
   the complete pathname to the file, and precede each directory name or filename with a
   backslash (/). The pathname/script-name combination must not exceed 64 characters.
   Enclose this variable in quotes.

Some host operating systems, including most UNIX implementations, are case sensitive. These operating systems interpret "SCRIPTNAME" and "scriptname" as different names because one is in upper-case letters and one is in lower-case letters. Be sure to enter the exact letters when you specify a directory name or a filename. Otherwise, the host operating system may not recognize it.

Example

This command executes a script called `loginsetup` in the directory `/Scripts/Chris`.

```
TS3395> script "/scripts/chris/loginsetup"

Searching for script file.  Please wait. . .
```

The terminal server's response to this command depends on the contents of the script file. At some ports, the commands in the script appear on the screen as the terminal server executes them. If the file contains a command such as CONNECT or RLOGIN, the user might see the logon banner of a remote host. The script could contain commands such as SET PORT TELNET TN3270 DEVICE to specify the type of terminal emulation to run during a TN3270 session, or SET SESSION to change the data transparency mode of a session. Unlike the CONNECT or RLOGIN commands, these commands would not necessarily cause any visible response from the terminal server.

If the terminal server cannot find the script file, or you do not have access to the script file, an error message appears at your terminal. A message such as "Temporary resource conflict - Please try again" may appear if many other users attempt to execute the script file at the same time as you do. If this message appears, wait a few minutes and then try again.

Related Commands

These commands provide information that is useful with the SCRIPT command:

Command	Function
SHOW PORT ALTERNATE CHARACTERISTICS	Displays the PORT SCRIPT LOGIN characteristic.
SHOW PORT STATUS	Displays the name of the host which contains the script file that was last executed a this port.

SET PORT
Change port characteristics

The SET PORT command changes port characteristics in the terminal server's operational database. These changes take effect immediately, but remain in effect only until you log off the port or until the network manager initializes the terminal server.

Notes

Users at Secure ports can set some characteristics of their own ports, including all those listed here. Users at Privileged ports can define and set these and other characteristics, as well as the characteristics of other ports. See *Commands Reference for the Model 3395/3395A Terminal Server* for information about the characteristics of the DEFINE|SET PORT commands that are accessible at Privileged and Nonprivileged ports.

Many of the port characteristics you can set with these commands assign session management functions, such as local switch or forward switch, to the characters you specify. Chapter 2 explains more about these characters. Before you attempt to assign a function to a character, check the current settings, if any, for the characters at your port. Use the SHOW PORT CHARACTERISTICS command to display the settings of the session switching characters, the SHOW PORT ALTERNATE CHARACTERISTICS command to display the settings of the editing control characters, and the SHOW PORT TELNET CHARACTERISTICS command to display the settings of Telnet session management characters.

* An asterisk next to a setting indicates that it is the default setting for a port characteristic.

Syntax

```
SET PORT [port-list] [characteristic setting]
...[characteristic setting]  [characteristic setting]
```

Where   Means

port-list Set characteristics for the ports you specify in this variable. Because the default value is the issuing port, you can omit the port number.

Abbreviation

```
SE   PO
```

The following is a summary of the available characteristics. A detailed description of each follows on the page after the summary.

Characteristics	Setting	Description
[AUTOPROMPT]	[ENABLED]* [DISABLED]	Initiate a logon sequence when you establish a session between your port PROMPT and a LAT service node. The LAT service node must also support this characteristic.
[BACKWARD SWITCH]	[*character*] [NONE]*	Reopen the next lower-numbered session during the current session, without returning to the Model 3395/3395A command interface when you enter this *character* or control character sequence. If NONE, do not enable a backward switch character at this port. Use this keyword to disable a previously defined backward switch character.
[FORWARD SWITCH]	[*character*] [NONE]*	Reopen the next higher-numbered session during the current session, without returning to the Model 3395/3395A command interface when you enter this character or control character sequence. If NONE, do not enable a forward switch character at this port. Use this keyword to disable a previously defined forward switch character.
[LOCAL SWITCH]	[*character*] [NONE]*	Suspend the current session and recall the terminal server local command mode when you enter this character or control character *character* sequence. You must set a local switch character to suspend active sessions if your terminal does not have a <Break> key. If NONE, do not enable a local switch character at this port. Use this keyword to disable a previously defined local switch character.
[PAUSE]	[ENABLED] [DISABLED]*	Pause the screen after displaying 24 lines of information from a SHOW|LIST command. When enabled, the pause continues until you press the <Return> key, and then the display scrolls the next 24 lines. When disabled, the display continuously scrolls all information.
[RESOLVE SERVICE]	[ANY]* [LAT] [TELNET]	Determine how the terminal server should interpret a LAN destination name in these commands: CONNECT, TELNET CONNECT, LAT CONNECT. These are valid RESOLVE SERVICE keywords: LAT Interpret the name as a LAT service. TELNET Interpret the name as a Telnet domain name or an Internet address. ANY Interpret the name as a LAT service first, then as a Telnet destination if no LAT service exists with that name.

[TELNET ABORT OUTPUT]]	[*character*] [NONE]*	Stop sending output to a terminal during a Telnet session when you use this character or control character sequence. Use of this character does not terminate the program that is producing the output; only the display of the output. If NONE, do not enable a Telnet abort output character at this port. Use this keyword to disable a previously defined Telnet abort output character.
[TELNET ATTENTION]	[*character*] [NONE]*	Suspend the current program and return to the operating system command prompt during a Telnet session, when you use this character or control character sequence. If you have established the Telnet session through another Model 3395/3395A Terminal Server port, the remote terminal server port passes a break sequence to the Telnet host when you use this character. The break sequence suspends the current program and returns the operating system prompt. If NONE, do not enable a Telnet attention character at this port. Use this keyword to disable a previously defined Telnet attention character.
[TELNET ERASE CHARACTER]	[*character*] [NONE]*	Delete the character to the left of the cursor during a Telnet session, when you use this character or control character sequence. If NONE, do not enable a Telnet erase character at this port. Use this keyword to disable a previously defined Telnet erase character character.
[TELNET ERASE LINE]	[*character*] [NONE]*	Delete all characters in the current line, backwards from the cursor position to a prompt or a carriage return/linefeed character, in a Telnet session, when you use this character or control character sequence. If NONE, do not enable a Telnet erase line character at this port. Use this keyword to disable a previously defined Telnet erase line character.
[TELNET INTERRUPT]	[*character*] [NONE]*	Suspend, interrupt, abort, or terminate a user process during a Telnet session when you use this character or control character sequence. If NONE, specifies no Telnet interrupt character at this port. Use this keyword to disable a previously defined Telnet erase line character.

[TELNET NEWLINE]	[*character*] [NONE]*	Determine which characters the terminal server transmits to a Telnet host when you press the <Return> key on your terminal.
		NULL*
		Transmit a Carriage Return and a Null character to a Telnet host when you press the <Return> key.
		LINEFEED
		Transmit a Carriage Return character and a Linefeed character to a Telnet host when you press the <Return> key.
		NOTHING
		Transmit only a Carriage Return character to a Telnet host when you press the <Return> key.
[TELNET NEWLINE FILTERING]	[NONE]* [CR] [NULL] [LINEFEED]	Determine how the terminal server interprets Telnet New Line sequences that come from the network and are bound for your terminal. These are the possible types of Telnet newline filtering:
		NONE*
		Do not translate Telnet new line sequences.
		CR Translate Telnet new line sequences, such as CR/NULL or CR/LF, to a carriage return (CR).
		NULL Translate Telnet new line sequences, such as CR/NULL or CR/LF, to a carriage return and a null (CR/NULL).
		LINEFEED
		Translate Telnet new line sequences, such as CR/NULL or CR/LF, to a carriage return and a linefeed (CR/LF).
[TELNET QUERY]	[*character*] [NONE]*	Prompt a Telnet host to send a signal to the terminal that it is still up and running, during a Telnet session, when you use this character or control character sequence. (Use this character if you suspected that a Telnet process has "crashed" or "hung.") If NONE, do not enable a Telnet query character at this port. Use this keyword to disable a previously defined Telnet query character.

[TELNET SYNCHRONIZE]	*[character]* [NONE]*	Regain control of a Telnet process that you suspect is no longer functioning properly. When you use this character or control character sequence. Most Telnet hosts will return to the operating system command prompt, although this is not always the case. If NONE, do not enable a Telnet synchronize character at this port. Use this keyword to disable a previously defined Telnet synchronize character.
[TYPE]	[ANSI] [HARDCOPY] [SOFTCOPY]*	Change the characteristic that affects how the terminal server sends data to the terminal and how the terminal displays that data. For terminals that emulate several terminal types, this characteristic should match the actual terminal setting. This characteristic only affects the terminal when it runs the Model 3395/3395A command processor.

ANSI   Produce output for a video-display terminal and support American Institute of Standards (ANSI) escape sequences. Generally, this characteristics applies to terminals that support the clear screen function and special cursor control functions, but not line drawing. Typical ANSI terminals are DEC VT100, VT200, and VT300 terminals, or terminals compatible with these types.

HARDCOPY
    Produce output for a printing terminal or a nonvideo-display terminal, or emulate a printing terminal. Most hardcopy terminal types produce output on paper. When you delete characters on a hardcopy terminal, they appear on the paper between two backslash characters (\ \).

SOFTCOPY*
    Produce output for a video-display terminal that does not support ANSI escape sequences. Softcopy terminal types echo character deletions when you use the <Delete> key, but do not support the clear screen function, special cursor control functions, or the line drawing function.

[VERIFICATION]	[ENABLED]* [DISABLED]	Display status messages on the terminal screen when you establish a session, disconnect from a session, or switch a session.

Examples

None of these examples specify a port number since the commands apply to the issuing port.

1. This command to assigns a backward switch character.

   In this example, a user sets the backward switch character to <Ctrl><K>. (When you press the <Ctrl> key at the TS3395> prompt, the terminal displays the ^ character.)

   ```
   TS3395> set port backward switch  ^p

   TS3395>
   ```

2. This command enables the pause feature.

   ```
   TS3395> set port pause enabled

   TS3395>
   ```

3. This command changes the RESOLVE SERVICE characteristic. A user sets the RESOLVE SERVICE characteristic to LAT. This causes the terminal server to interpret LAN destinations in CONNECT commands from this port as LAT services.

   ```
   TS3395> set port resolve service lat

   TS3395>
   ```

Related Commands

These commands provide functions that are useful with the SET PORT command:

Command	Function
SHOW PORT CHARACTERISTICS	Displays the current values for general port characteristics, including the session management control characters
SHOW PORT ALTERNATE CHARACTERISTICS	Displays the current values for the Pause, Resolve Service, Idle Timeout, DTR wait, Typeahead size, Slip, and Line Editing control characters
SHOW PORT TELNET CHARACTERISTICS	Displays the current values for port characteristics related to Telnet sessions, including the TN3270 characteristic and Telnet session management control characters.

SET SESSION
     Change the data transparency mode of the current session

The SET SESSION command changes the way a port interprets control characters during a session.

Notes

The terminal server supports four data transparency modes: interactive, passall, pasthru, and transparent. The SHOW SESSIONS display includes the data transparency mode of current sessions in the Service Mode field. Interactive mode is the typical mode for most sessions. If you want to transfer files between a PC and a host, however, you need to set the transparency mode at your port to PASSALL. See Chapter 6 for more information about PC file transfers.

Syntax

```
SET SESSION      [INTERACTIVE]
                 [PASSALL]
                 [PASTHRU]
                 [TRANSPARENT]
```

Abbreviation

```
SE SES      [I]
            [PASS]
            [PAST]
            [TRANS]
```

Where   **Means**

INTERACTIVE   Enable all control characters. These include session switching characters, Telnet session management characters, terminal server messages, and XON|OFF flow control characters. INTERACTIVE is the typical setting for most sessions.

PASSALL   Disable all control characters. When the data transparency of a session is set to PASSALL, control characters from the terminal server are sent to the host or other device as data, rather than control signals. This mode is useful for transferring data files that contain control characters, such as binary program files, without interference from the terminal server.

PASTHRU   Disable all control characters *except* the XON|OFF flow control characters. This mode is useful for transferring ASCII files, such as a file that you want to print on a printer connected to another terminal server.

TRANSPARENT   Disable all session switching characters, Telnet session management characters, and XON|OFF flow control characters. During a Telnet session, ignore Telnet option messages received from a remotely initiated session and do not transmit any Telnet option messages from a locally initiated session. During a LAT session, signal the LAT service that the terminal server is set to PASSALL, but behave locally as if the terminal server is set to PASTHRU.

Example

This command sets the data transparency mode of the port to PASSALL.

```
TS3395> set session passall

TS3395>
```

Related Commands

These commands provide information that is useful with the SET SESSION command:

Command	Function
SHOW SESSIONS	Displays the data transparency mode of the current session.
SHOW|LIST PORT	Displays the default session mode for all sessions.

SHOW DESTINATIONS
    Display a list of LAT services and Telnet destinations

The SHOW DESTINATIONS command displays a current list of LAT service names and Telnet destinations on the network.

Notes

The network manager can limit access to destinations on the network, so you might not be able to reach all destinations in the display. Also, some ports may not accept commands such as SHOW DESTINATIONS that display network resources. Check with the network manager if you have questions about your access to a network destination or the availability of display commands at your port.

Syntax

```
SHOW DESTINATIONS      [name]
```

Abbreviation

```
SH        DES
```

Where   **Means**

name   Display information about the destinations you specify in this variable. Use this variable to view a limited number of destinations, or one destination, rather than a complete list. LAT service names consist of 1 through 16 characters. Telnet destination names may contain up to four segments, each separated with period.

You can use the asterisk character (*) as a template to select a subset of names with this command. For example, if you entered SHOW DESTINATIONS AB*, the terminal server would display all available names that began with AB. If you entered SHOW DESTINATIONS A*BC, the system would display names that began with A and ended with BC.

To display information about all the destinations on the LAN, enter the SHOW DESTINATIONS command without variables.

Example

```
TS3395> show destinations
```

```
LattisNet V5.0 Rom 430001 HW 00.01.00 Lat Protocol V5.1  Uptime:  1 19:27:53

FINANCESUN.COM                       UNIX Host at 140.179.20.1
ACCOUNTSVAX                          VAX/VMS LAT SERVICE
PAYROLLHOST                          IBM Host
LASER2                               Department Laser Printer
```

Field	Means
LattisNet Vx.y	The Model 3395/3395A product type and the version of the terminal server software, where *x.y* is the major and minor software release level.
Rom *xxxxxx*	The version of ROM software on the terminal server.
HW xx	The version of terminal server hardware, where *xx* is the version of cards.
Lat Protocol Vx.y	The version of LAT protocol running on the terminal server, where Vx.y indicates the major and minor protocol release level.
Uptime	The amount of time that the terminal server has been running since it was last initialized in this form: *days hours*:*minutes*:*seconds*.
Destination	The names of the LAT and Telnet destinations on the network.
Description	An optional text string describing the destination.

Related Commands

The SHOW DESTINATIONS command provides information that is useful with these commands:

Command	Function
CONNECT	Establishes a session with a LAT service or Telnet destination.
TELNET CONNECT	Establishes a session with a Telnet destination.
LAT CONNECT	Establishes a session with a LAT service.
SHOW NODES	Displays a list of LAT service nodes.
SHOW DOMAIN	Displays a list of learned or static Telnet domains.
SHOW SERVICES	Displays a list of available LAT services.
SET PORT PAUSE ENABLED	Pauses the display after 24 lines of information appear on the screen. The display continues to scroll information when you press the <Return> key.

SHOW|LIST DOMAIN
Display a list of Telnet domain names

The SHOW DOMAIN command displays a list of Telnet domains and their Internet addresses from the operational database of the terminal server. The LIST DOMAIN command displays information about Telnet domains in the permanent database of the terminal server.

Notes

The network manager can limit access to domains in the network, so you may not be able to reach all domains in the display. Also, some ports may not accept commands such as SHOW|LIST DOMAIN that display network resources. Check with the network manager if you have questions about your access to a domain.

Syntax

```
LIST DOMAIN        [domain-name][ALL]

SHOW DOMAIN        [domain-name][ALL]
                                    [LEARNED]
                                    [LOCAL]
```

Abbreviation

```
L    DO    ALL

SH   DO    ALL
           LEARNED
           LOCAL
```

Where	Means
domain-name	Display information about the domain you specify in this variable. Domain names may contain up to four segments, each separated with period.
	You can use the asterisk character (*) as a template character to select a subset of names with this command. For example, if you entered SHOW DOMAIN AB*, the terminal server would display all available names that began with AB. If you entered SHOW DOMAIN A*BC, the system would display names that began with A and ended with BC.
ALL	Display information about all domains on the network. This is the default keyword for this command.
LEARNED	Display information about domains from the primary or secondary domain name server.
LOCAL	Display information about local domains.

Example

```
          TS3395> show domain
```

```
Internet          Domain          10 May 1993  14:09:51

Entry Address                      TTL SRC Name

2     140.179.139.254        47 Pri FINANCE.SUN.COM
1     140.179.20.1           49 Pri MINX.SYNOPTICS.COM
3     140.179.20.1           49 Pri XEBRA.SYNOPTICS.COM
```

Field	Means
Entry	A number that the terminal server assigned to the domain name.
Internet Address	The Internet address of the node in the domain.
TTL	The number of hours that the terminal server retains information from the primary or secondary domain name server about the domain name in this entry line.
SRC Name	The source of the information about the domain name in this entry line. The possible sources are Local, Primary, and Secondary.
Domain Name	The names of the domains available on the network.

Related Commands

The SHOW|LIST DOMAIN commands provide information that is useful with these commands:

Command	Function
CONNECT	Establishes a session with a Telnet destination or LAT service.
TELNET CONNECT	Establishes a session with a Telnet destination.
RLOGIN	Establishes a session with a host if the host has been configured for an RLOGIN implementation.
SET PORT PAUSE ENABLED	Pauses the display after 24 lines of information appear on the screen. The display continues to scroll information when you press the <Return> key.

SHOW NODES
   Display a list of LAT service nodes on the network

The SHOW NODES command displays a list of LAT service nodes on the network, and information about those nodes.

Notes

The network manager can limit access to nodes on the network, so you may not be able to reach every node in the display. Also, some ports may not accept commands such as SHOW NODES that display network resources. Check with the network manager if you have questions about your access to a network destination or the availability of display commands at your port.

Syntax

```
SHOW NODES [node-name]  [COUNTERS]
                       [STATUS]
                       [SUMMARY]

           [ALL]        [COUNTERS]
                       [STATUS]
                       [SUMMARY]
```

Abbreviation

```
SH NOD
```

Where   **Means**

node-name   Display information about the node you specify in this variable.

ALL   Display information about all nodes on the network.

COUNTERS   Display statistics about activity on the node you specify in the *node-name* variable or all nodes.

STATUS   Display status information about the node you specify in the *node-name* variable or all nodes. This information includes the availability of the node, the Ethernet address, the group codes and the services available at the node.

SUMMARY   Display a one-line summary of information for the node you specify in the *node-name* variable or all nodes. This is the default display for this command.

Examples

SHOW NODES STATUS

1. TS3395> show nodes status

```
       Node: FINANCEVAX                      Address:  AA-00-04-00-D0-04
       LAT Protocol:    V5.1                 Data Link Frame Size:  1500

                  Identification: FINANCEVAX - The Corporate MicroVAX II

                                              Node Groups:   0

                  Service Name        Status   Rating  Identification

XANADU            3 Connected     71  FinanceVAX - The Corporate MicroVAX II
```

Field	Means
Node: *node-name*	The name of the LAT service node.
LAT Protocol Vx.y	The version number (*x*) and the update level (*y*) of the LAT protocol running on the node.
Address	The Ethernet address of the node.
Data Link Frame Size	The maximum size of a Data Link Frame that the node can use to receive messages.
Identification	The text string that identifies the node.
Node Groups	The group codes enabled for this node.
Service Name	The entries in this column are the names of LAT services that this node offers to network users.
Status	The entries in this column indicate the availability of the LAT services that this node offers to network users. These entries can be the following:

	Available	Users can establish sessions with this service.
	n Connected	Users can establish sessions with the service, and *n* sessions are currently active at this service.
	Unknown	Although users could reach the service in the past, they may no longer be able to reach it.
	Unavailable	Users cannot reach the nodes that offer this service.

Field	Means
Rating	The value that the node assigns to the service, which indicates the relative capacity of the service to accept new connections. A high rating indicates that a service is more able to accept connections. The range of values for this rating is 0 through 255.
Identification	The text string that identifies this service.

SHOW NODES SUMMARY

2. TS3395> show nodes summary

```
Node Name           Status      Identification

FINANCEVAX          3 Connected  FinanceVAX - The Corporate MicroVAX II
```

Field   **Means**

Node Name   The name of the LAT service node.

Status   The entries in this column indicate the availability of the node to users on the network. The different states of availability include the following:

	n Connected	Users can reach the node, and *n* sessions are currently active at the node.
	Reachable	Users can reach the node, and no sessions are currently active at the node.
	Requesting	Users cannot reach the node, but the node is attempting to make a remote connection to a service that the local terminal server offers.
	Unknown	Although users could reach the node in the past, they may no longer be able to reach it.
	Unavailable	Users cannot reach the node.

Identification   The text string that identifies the node.

SHOW NODES COUNTERS

3. TS3395> show nodes counters

```
Node: FINANCEVAX                                    21 May 1993  10:26:52

Seconds Since Zeroed:       508882    Multiple Node Addresses:        0
Messages Received:          147913    Duplicates Received:            0
Messages Transmitted:       141373    Messages Re-transmitted:        7
Slots Received:              99696    Illegal Messages Received:      0
Slots Transmitted:          101103    Illegal Slots Received:         0
Bytes Received:            1981123    Solicitations Accepted:         0
Bytes Transmitted:           85032    Solicitations Rejected:         0
```

Field	Means
Node	The name of the LAT service node.
Seconds Since Zeroed	The number of seconds since the counters were reset to zero.
Messages Received	The number of LAT virtual circuit messages that the node has sent to the terminal server.
Messages Transmitted	The number of LAT virtual circuit messages that the server has sent to the node.
Slots Received	The number of slots, or message segments during a session, that the node sent to the terminal server.
Slots Transmitted	The number of slots, or message segments during a session, that the terminal server sent to the node.
Bytes Received	The number of bytes contained in datagrams that the node has sent to the terminal server, excluding Ethernet header and CRC data.
Bytes Transmitted	The number of bytes contained in datagrams that the terminal server has sent to the node, excluding Ethernet header and CRC data.
Multiple Node Addresses	The number of times that the node broadcast an announcement with a physical address that was different from the physical address given in a previous announcement.
Duplicates Received	The number of duplicate messages that the server received from the node.
Messages Retransmitted	The number of messages that the server retransmitted to the node.

Field	Means
Illegal Message Received	The number of illegally formatted messages that the server received from the node.
Illegal Slots Received	The number of illegally formatted slots or message segments for a particular session, that the terminal server has received from the node.
Solicitations Accepted	The number of connection requests that the terminal server has accepted from the node. This number includes both requests that the server placed in a queue and requests that the server accepted immediately.
Solicitations Rejected	The number of connection requests from the node that the terminal server rejected.

Related Commands

The SHOW NODES command provides information that is useful with these commands:

Command	Function
CONNECT	Establishes a session with a LAT service at a specific node. you specify on the command line.
LAT CONNECT	Establishes a session with a LAT service at a specific node you specify on the command line.
SHOW SERVICES	Displays a list of LAT services on the network.
SET PORT PAUSE ENABLED	Pause the display after 24 lines of information appear on the screen. The display continues to scroll information when you press the <Return> key.

SHOW|LIST PORT
   Display information about the characteristics and counters of your port

The SHOW PORTS command displays information about the operational database parameters of your terminal server port. The LIST PORTS command displays information about permanent database parameters of your terminal server port.

UNIX alias for SHOW PORT STATUS: STATUS

Notes

Users at Secure ports can only display information about their own ports.

UNIX alias: STATUS [*port-list*.]

Syntax

SHOW PORT	[*port-list*]	[CHARACTERISTICS]
LIST		[COUNTERS]
		[STATUS]
		[SUMMARY]
		[ALTERNATE CHARACTERISTICS]
		[TELNET CHARACTERISTICS]
SHOW PORT		[KEYMAP]

Abbreviation

SH   PO

Where	**Means**
port-list	Display information about the port you specify in this variable. Secure users can only specify their own port numbers.
CHARACT.	Display the current values for general port characteristics, including the session management control characters. This is the default display.
ALTERNATE CHARACT.	Display the current settings for the PAUSE, RESOLVE SERVICE, IDLE TIMEOUT, DTRWAIT, TYPEAHEAD SIZE, SLIP ADDRESS, and line editing characters.
TELNET CHARACT.	Display the current values for port characteristics that are related to Telnet, including TN3270 characteristics and Telnet session management characters.
COUNTERS	Display the values of port counters.
STATUS	Display information about the current session.
SUMMARY	Display a one-line status message that summarizes the access method, connection status, and services available at this port.
KEYMAP	Display the keymap for the device this terminal emulates during a TN3270 session, if a keymap has been allocated for this individual port.

Examples

While secure users cannot alter many of the characteristics in this display, the description includes information about all characteristics. Secure users can set the session switching characters shown in this display with the SET PORT command.

SHOW|LIST PORT CHARACTERISTICS

1. TS3395> show port characteristics

```
Port 12:  Valerie                        10 June 1993  13:49:27

Character Size:            8         Input Speed:       19200
Flow Control:            XON         Output Speed:      19200
Parity:                 None        Modem Control:  Disabled

Access:                 Local       Local Switch:         ^K
Backwards Switch:       None        Name:            PORT_12
Break:                  Local       Session Limit:         4
Forwards Switch:        None        Type:               Soft

Preferred Service: None

Authorized Groups:   0
(Current)  Groups:   0

Enabled Characteristics:

Autobaud,  Autoprompt,  Broadcast,  Input Flow Control,  Line Editor,
Loss Notification,  Message Codes,  Verification,  Internet Connections
```

Field	Means
Port *n*	The number of the terminal server port.
username	The name you used to log on to this port
Character Size	The size of individual characters, in bits, that pass through the serial connection between the serial device, such as your terminal, and the terminal server port. The character size is either 7 or 8 bits.

Flow Control   The method that the serial interface uses to regulate the flow of data between this port and the serial device that is connected to it, such as your terminal. The flow control method that appears in this field may be one of the following:

Method   **Means**

CTS   The port emulates RTS/CTS flow control with the DCD and DTR modem control signals. These signals control data transfer between the port and the serial device connected to it.

DSR   The port emulates DTR/DSR flow control with the DCD and DSR modem control signals. These signals control data transfer between the port and the serial device connected to it.

XON   The port uses XON|OFF flow control to control data transfer between the port and the serial device connected to it.

Disabled   The port does not use any flow control method.

Parity   The method that the terminal server and the terminal use to check for single-bit errors in characters that they send back and forth. This type of error checking is called parity checking because the terminal provides an extra bit, called a parity bit, to check the characters. This field displays the type of parity checking, if this checking exists:

Parity   **Means**

Even   The port and the terminal ensure that each character contains an even number of 1's, including the parity bit.

Odd   The port and the terminal ensure that each character contains an odd number of 1's, including the parity bit.

None   The port and the device do not check characters for parity.

Input Speed   The rate that the terminal transmits data and the terminal server port processes that data. This rate, in bits-per-second, can be any of these: 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200, 38400.

Output Speed   The rate that the terminal server port transmits data and the terminal processes the data. This rate, in bits-per-second, can be any of these: 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200, 38400.

Modem Control   Whether or not your terminal can use modem control signals during data communications. Modem control can be Enabled or Disabled.

Access   The type of connections the terminal server allows at this port.

Backward Switch

Shows the character that causes the terminal server to exit from the current session and connect to the next lower-numbered session, or None if this is undefined. Control characters are displayed as ^n (e.g., <Ctrl>/<B> is shown as ^B).

Break

Shows which action the port will take when the user presses the <Break> key. The possible values which will be shown are:

Action   **Means**

Disabled   Indicates that the terminal server does nothing when the user presses the

<Break> key.

Local   Indicates that the terminal server will return to the local command mode when the user presses the <Break> key.

Remote   Indicates that the terminal server sends the break to the connection partner when the user presses the <Break> key.

Forward Switch   Shows the character that causes the terminal server to exit from the current session and connect to the next higher-numbered session, or None if this is undefined. Control characters are displayed as ^n (e.g., <Ctrl>/<B> is shown as ^B).

Local Switch   Shows the character that causes the terminal server to exit from the current session and return to the local command mode, or None if this is undefined. Control characters are displayed as ^n (e.g., <Ctrl>/<B> is shown as ^B).

Name   Shows the server manager-defined or default name of the port.

Session Limit   The maximum number of simultaneous sessions you can establish at this port.

Type   The type determines how your terminal produces output and how the terminal server sends data to the port when the port is in local command mode. The different terminal types that can appear in this field are these:

Type   **Means**

ANSI   The terminal produces output on a video display and supports ANSI escape sequences.

Hard   The terminal produces output on paper, such as a printer. When you delete characters with this type of terminal, the deleted characters are echoed between backslash characters (//).

Soft   The terminal produces output on a video display, but does not support ANSI escape sequences.

Preferred Service   The name of a LAT service or Telnet destination where the terminal server automatically attempts to establish a session when you enter a connect command without a destination name.

Dedicated Service   The name of a LAT service or Telnet destination where the terminal server
service name   automatically attempts to establish a session when you log on to the port.

Node: *node name*   The name of the LAT service node which offers the preferred service.

Destination: The name of the terminal server port which offers the preferred or
port-name   dedicated service.

Authorized Groups The names of the LAT service groups where this port can make connections.

Current Groups   The names of the LAT service groups where you have chosen to have access. This list may be the same or a subset of the authorized group list.

Enabled   The characteristics either you or the network manager have enabled with
Characteristics   the DEFINE|SET PORT commands. The characteristics that can appear in this field include the following:

Characteristic	Means
Autobaud	The port determines the input port speed, parity, and character size for the device connected to it, and automatically sets the appropriate port characteristics.
Autoconnect	The port automatically connects to a dedicated service or a preferred service when the user logs on to the port, or the port attempts to reconnect a session when a connection failure occurs.
Autodedicated	The terminal server automatically logs on the port and establishes a session between the port and a dedicated service when the terminal server is initialized or the port is logged out.
Autoprompt	The terminal server automatically prompts the LAT service node to run its logon routine when the port makes a connection to that node.
Broadcast	The port can receive messages that are broadcast from other ports on the terminal server.
Connectresume	The CONNECT command resumes an existing session rather than establishing a new session when you enter the command with a destination name where you already have a session established.
Dial back	The dial-back feature is enabled at this port. This feature limits remote to the terminal server to a specific list of users and phone numbers.
Dial up	The port is connected to a dial-up line.

Characteristic	Means
DSRlogout	The terminal server logs out the port when the serial interface DCD signal is deasserted.
DSRWait	The terminal server begins the login sequence at this port when the DSR signal is asserted.
Inactivity Logout	The terminal server logs out the port after the period of time if you have not entered any commands at the port. The network manager specifies the amount of time with the SERVER INACTIVITY TIMER value.
Input Flow Control	This port uses flow control to regulate the flow of data from the device connected to it.
Internet Connections	The port can accept Internet addresses as well as domain names in connect commands.
Interrupts	You can use the <Break> key or a local switch character to interrupt a session at a remote terminal server.
Kerberos	The Kerberos security system is enabled at this port.
Limited View	You cannot view destinations on the network with the SHOW|LIST DESTINATIONS, NODES, or SERVICES commands.
Line Editor	You can use editing characters at this port.
Loss Notification	The terminal "beeps" if you enter a command line that exceeds 132 characters.
Message Codes	The port displays the number associated with status or error messages.
Menu	This port uses a menu-driven interface.
Multisessions	This port uses multisessions.
Noloss	This port stores data in a buffer while waiting for a session to be established, then sends the data to the connections partner when the session is established.
Output Flow Control	This port uses flow control to regulate the flow of data to the device connected to it.
Password	You must enter a password to log on to this port.
Pause	This port pauses when it sends data from display commands to the terminal after it fills each screen.
PPP	The Point-to-Point Protocol is enabled at this port.
Privileged Menu	The port is privileged and uses the menu interface. (Not visible to Secure users.)

Characteristic	Means
Queuing	The port has a queue where it places LAT service connection requests if the LAT service is busy when you attempt to make a connection to it.
Remote Modification	Certain PORT characteristics (of this port) can be changed by a process running at a VMS host.
Security	The security level of the port is Secure.
Signal Check	The terminal server allows connections to this port when the DSR signal is deasserted or logs out this port when the DCD signal is deasserted.
SLIP	The Internet SLIP protocol is enabled for this port, and the port expects all data to be in SLIP packets.
Verification	The port displays information messages when you connect, disconnect, or switch a session.
Xremote	The Xremote protocol is enabled at this port.

SHOW|LIST PORT ALTERNATE CHARACTERISTICS

2. TS3395> show port alternate characteristics

```
    Port 12:   Becca                               19 June 1993  09:18:47

    Resolve Service:           Any    DTR wait:                   Disabled
    Idle Timeout:                0    Typeahead Size:                  128
    SLIP Address:          0.0.0.0    SLIP Mask:                   0.0.0.0
    Remote SLIP Addr:      0.0.0.0    Default Session Mode:    Interactive
    TCP Window Size:           256    Prompt:                       TS3395
    DCD Timeout:              2000    Dialback Timeout                  20
    Stop Bits                   1    Script Login                Disabled
                                            XDM Query             Broadcast
                                                                  XDM Host
                                                        TCP Keepalive Timer
                                                     Line Editor Characters


         Backspace Character:          ^D    Forwards Character:        ^F
         Delete Beg Character:         ^U    Delete Line Character:     ^X
         End of Line Character:        ^E    Begin Line Character:      ^H
         Previous Line Character:      ^B    Next Line Character:       ^N
         Quoting Character:            ^V    Insert Toggle Character:   ^A
         Cancel Character:             ^Z    Redisplay Character:       ^R
```

Field	Means
Port *n*	The number of the terminal server port.
username	The name you used to log on to this port, or the name the network manager assigned to the port.
Resolve Service	The method that the terminal server uses to interpret variables in connect commands from this port. These are the possible values in this field:

Type	Means
Any	Interpret a variable as a LAT service name first, and if no LAT service with that name exists, then interpret the variable as a Telnet destination.
LAT	Interpret the variable as a LAT service name.
Telnet	Interpret the variable as a Telnet destination.

Field	Means
Idle Timeout	The number of minutes the terminal server waits before it disconnects a session where there is no activity, and which was established in a queued connection request.
SLIP Address	The Internet address assigned to the server port.
Remote SLIP ADDR	The Internet address of the remote device.

Field	Means
TCP Window Size	The size, in bytes, of the TCP window that the port uses during a TCP/IP session.
DCD Timeout	The period of time that the DCD signal can be deasserted before the terminal server disconnects the port. This period of time can be between 0 and 10,000 milliseconds, in increments of 100 milliseconds).
Stop Bits	The number of bits attached to the end of each character that the port sends to the terminal. These bits signify the end of a character. The values that can appear in this field mean the following:

Value	Means
1	One stop bit.
2	Two stop bits.
3	One and one half stop bits.
4	The terminal server assigns the number of stop bits based on the port speed. This is the default value.

Field	Means
XDM Query	Shows the method by which the server locates an XDM manager.

SPECIFIC	Search for the host at the location in the *domain-name* or *internet-address* variable, which is the XDM manager.
BROADCAST	Search the network for an XDM manager using the Internet broadcast address.
INDIRECT	Search for the host at the location in the *domain-name* or *internet-address* variable. This host provides a list of XDM managers on the network.

Field	Means
XDM Host	Shows the name of the XDM manager currently in use.
TCP Keepalive Timer	Shows the number of minutes that the terminal server will wait for a response from the Telnet partner before terminating the session.

DTR wait	The conditions needed for the port to assert the DTR Modem control signal. These are the possible values of this field:

DTR Signal	Means
Disabled	The port continuously asserts the DTR signal.
Enabled	The port asserts the DTR signal when you make a connection to a device, or when the device connected to the port asserts an RNG signal.
FORCONNECTION	The port asserts the DTR signal when you make a connection.
FORRING	The port asserts the DTR signal when the device connected to the port asserts an RNG signal

Typeahead size	The number of bytes, or characters, that the type-ahead buffer can hold before transmitting these characters to the network.
SLIP Mask	The Internet subnet mask that the terminal server uses when it forwards a packet over a SLIP link.
Default Session Mode	The initial setting for the data-transparency mode for all sessions. These are the possible values for this field:

Session Mode	Means
Interactive	The server initially enables all session switching characters, Telnet session management characters, and XON|OFF flow control for all sessions. The server does not negotiate the Telnet Binary option.
Pasthru	The server initially interprets all session switching characters and Telnet session management characters as data, but does use XON|OFF flow control. The server attempts to negotiate the Telnet binary option.
Passall	The server initially disables all session switching characters, Telnet session management characters, and XON|OFF flow control for all sessions. The server attempts to negotiate the Telnet binary option.
Transparent	The server initially disables session switching characters, Telnet session management characters, and XON|OFF flow control. The server sets Telnet sessions to ignore Telnet option messages it receives from a remotely initiated session and does not try to send any Telnet option messages it receives from the locally initiated session. For LAT sessions, the server tells its partner it is Passall but acts locally as if it were Pasthru.

Prompt	The local command prompt that the port displays in command mode.

Dial-back   The number of seconds that the terminal server waits for a modem to respond to a
Timeout   dial-back signal.

Script Login   The status of the Script Login characteristic at this port. The status can be one of the
                 following:

Login Characteristic	Means
Required	This port must find and execute a script file when a user logs in to this port. If a script file does not exist, the terminal server logs out the port.
Enabled	This port searches for a script file when a user logs in to this port.
Disabled	This port does not search for a script file when a user logs in to this port.

Line Editing   If line editing is enabled at this port, the SHOW PORT ALTERNATE
Characters   CHARACTERISTICS display includes the values for the line editing characters. If this
                 characteristic is disabled at this port, the display does not include this information.
        Chapter 2 describes the functions of each line editing character.

SHOW|LIST PORT TELNET CHARACTERISTICS

3. TS3395> show port telnet characteristics

```
Port 12:  Sandy                          18 Sept 1991  14:35:55

Abort Output Character:        None   Newline:                 CR/NULL
Attention Character:             ^W   Newline Filtering            None
Default Port:                    23   Query Character:             None
Echo Mode:                   Remote   Remote Port:                 3200
Erase Keystroke Character:     None   Synchronize Character:       None
Erase Line Character:            ^K   Transmit:               Immediate
Interrupt Character:           None   Binary Session Mode:      PASTHRU
Terminal Type                  None   Tn3270 Device             VT220-7
Tn3270 TranslationTable    USENGLSH   Tn3270 Printer port           Any


Enabled Characteristics:


Tn3270 EOR
```

Field	Means
Port *n*	The number of the terminal server port.
username	The name you used to log on to this port, or the name the network manager assigned to the port with the DEFINE or SET PORT USERNAME command.
Abort Output Character	The character that terminates the display of output from a Telnet process when typed during a Telnet session. "None" appears in this field if no character exists.
Attention Character	The character that invokes the operating system prompt on a remote host when typed during a Telnet session. "None" appears in this field if no character exists.
Default Port	The default Telnet port number.
Echo Mode	This field indicates which partner in a Telnet session echoes the characteristics you type.

Mode	Means
Local	The terminal server echoes the characters you type.
Remote	The Telnet host echoes the characters you type.

Erase Keystroke Character	The character that deletes the character immediately to the left of the cursor when typed during a Telnet session. "None" appears in this field Character if no character exists.

Field	Means
Erase Line Character	The character that deletes all data in the current line, backwards from the cursor position when typed during a Telnet session. "None" appears in this field if no character exists.
Interrupt Character	The character that interrupts, aborts, or terminates a user process when typed during a Telnet session. "None" appears in this field in no character exits.
Terminal	The name of the terminal type that the terminal server sends to a Telnet type host while negotiating a Telnet session.
TN3270 Translation Table	The language translation table used at this port during TN3270 sessions.

Newline   The characters that the terminal server transmits to a host during a Telnet session when you press the <Return> key at this port. The possible values in this field are the following:

Setting	Means
CR/NULL	Transmit a Carriage Return and a Null character to the Telnet host when you press the <Return> key.
CR/LF	Transmit a Carriage Return and a Linefeed character to the Telnet host when you press the <Return> key.
CR	Transmit a Carriage Return character to the Telnet host when you press the <Return> key.

Newline Filtering	The method, if any, that the terminal server uses to translate Telnet Newline sequences coming from the network and bound for your port. The possible values in this field are the following:

Filter	Means
None	Does not translate Newline sequences.
CR	Translate a CR or a CR/LF in the data stream to a CR (a Carriage Return character).
CR/NULL	Translate a CR/NULL or a CR to a CR/NULL (a Carriage Return and a Null character).
CR/LF	Translate a CR/NULL or a CR/LF in to a CR/LF (a Carriage Return and a Linefeed character).

Query Character	The character that produces some visible indication that a host is still up and running when typed during a Telnet session. "None" appears in this field in no character exits.
Remote Port	The terminal server accepts remote connections from the Telnet port number in this field.

Field	Means
Synchronize Character	The character that regains control of a Telnet process when typed during a Telnet session. "None" appears in this field in no character exits.
Transmit	The method that the terminal server uses to transmit characters that you enter from the keyboard during a Telnet session.

Method	Means
Buffered	The server does not transmit characters until you enter a Control character.
Immediate	The server sends each character as soon as possible after you enter it.
Idle Time *value*	The maximum amount of time, expressed as a number of characters, that the terminal server waits before it transmits the data in the type-ahead buffer to the Telnet host.

Field	Means
Binary Session Mode	Shows the session mode (Passall or Pasthru) that will be used when the port negotiates the Telnet binary mode, or Interactive if the port should not negotiate the Telnet binary mode.
TN3270 Device	Shows the device type used at this port during a TN3270 session.
TN3270 Printer	Shows which port or any ports that are available for local TN3270 screen ports printing.
Enabled Characteristics	The characteristics enabled at this port.

SHOW|LIST PORT COUNTERS

4. `TS3395> show port counters`

The fields in the SHOW PORT COUNTERS display reflect the values of the counters since they were last reset to zero. Counters are reset to zero when the network manager initializes the terminal server, or when you or the network manager use the ZERO COUNTERS command.

The lower half of the display shows information about Serial Line Internet Protocol (SLIP) packets. These are packets the terminal server sends over a SLIP link.

See the network manager if you have questions about port counters.

```
Port 10:  Steve                             26 Sept 1991  14:10:57

Seconds Since Zeroed:         365155  Local Accesses:          4
Framing Errors:                    0  Remote Accesses:         0
Parity Errors:                     0  Idle Timeouts:           0
Overrun Errors:                    0
Input Count:                    1742
Output Count:                  84377


                              SLIP Packets
Serial Packets Received:           0  Network Packets Received:       0
Serial Packets Sent:               0  Network Packets Sent:           0
Serial Packets Discarded:          0  Network Packets Discarded:      0
Serial Packet Length Errors:       0
Serial Packet Checksum Errors:     0
```

Field	Means
Port *n*	The number of the terminal server port.
username	The name you or the network manager assigned to the port with the DEFINE or SET PORT USERNAME command.
Seconds Since Zeroed	The number of seconds since the counters were last reset to zero.
Framing Errors	The number of bytes the port has received with illegally formatted frames. Framing errors often produce garbled characters because of a missing stop bit.
Parity Errors	The number of bytes received at the port with parity errors. Parity errors can indicate a problem with the port or the terminal attached to it, or mismatched characteristics between the terminal and the port.
Overrun Errors	The number of times that the terminal server lost characters from this port because the terminal server input buffers overflowed. Overrun errors may indicate a flow control problem between the terminal and the port.

Field	Means
Input Count	The number of bytes (characters) that your terminal has transmitted to the port.
Output Count	The number of bytes (characters) that the port has transmitted to your terminal.
Local Accesses	The number of times you have logged on to the port.
Remote Accesses	The number of times that a user at another port or node on the LAN has established a connection at this port. For a terminal user viewing his or her own port, this counter is likely to be zero.
Idle Timeouts	The number of times the that terminal server has disconnected a session for being inactive, when the session was initiated by a remote connection queue. For a terminal user viewing his or her own port, this counter is likely to be zero.
Serial Packet Received	The number of SLIP packets this port has received from the remote device.
Serial Packets Sent	The number of SLIP packets this port has sent to the remote device.
Serial Packets Discarded	The number of SLIP packets from this port that the terminal server has discarded.
Serial Packet Errors	The number of SLIP packets that the port received that did not contain the Length correct number of bytes.
Network Packets Received	The number of Ethernet packets bound for this port that the terminal server has converted to SLIP packets.
Network Packets Sent	The number of SLIP packets from this port that the terminal server has converted to Ethernet packets.
Network Packets Discarded	The number of Ethernet packets that the terminal server has discarded.

SHOW|LIST PORT STATUS

5. TS3395> show port status

```
Port 12:  lynne                         Server:                  XFF4B15

                  Access:                 Local      Current Service:
                  Status:            Executing Cmd      Current Node:
                  Sessions:                     0      Current Port:

Input XOFFed:                  No      Output Signals:            N/A
Output XOFFed:                 No      Input Signals:             N/A

Last Char Output:              6c      Last Char Input:            0d

                                                       Script Host:

                                                       Script File:
```

Field	Means
Port *n*	The number of the terminal server port.
username	The name you used to log on to this port, or the name the network manager assigned to the port with the DEFINE or SET PORT USERNAME command.
Server	The name of the terminal server unit where this port is connected.
Access	The type of connections allowed at this port. The type of connections that may appear in this field are these:

Access type	Means
Dynamic	Users can gain access to the port through the local terminal server or from a remote host or device on the network.
Local	Users can gain access to the port only through the local terminal server.
Remote	Users can gain access to the port only through remote connections with a LAT service name or port number.

Status
The current activity at this port. Some of the possible status messages do not appear when you enter this command at your own port. These include Idle, Locked, Loading Script, Finding Script, and Running Script. Other status messages that you might see include these:

Status	Means
Connected	The port is currently connected to a LAT service or Telnet destination.
Connecting	The port is currently attempting to connect to a LAT service or Telnet destination.
Disconnected	The server disconnected the port from a session. (This may happen if a session is inactive for a long period of time.)
Disconnecting	The server is disconnecting a port from a session.
Executing Cmd	The port is executing a command from the terminal server local command mode.
Local Mode	The port is logged on to the server and is in local command mode.
Sessions	The number of active sessions at this port.

Current Service
The session that you most recently interrupted when you entered local command mode.

Current Node
The name of the LAT service node or the Internet address of the Telnet node where the current session is established.

Current Port
The Telnet port number if the current session is a Telnet session.

Current Domain
The domain name or Internet address of the Telnet destination if the current session is a Telnet session.

Input XOFFed
Whether XON|OFF flow control is enabled for data input to the port from your terminal.

Output XOFFed
Whether XON|OFF flow control is enabled for data output form the port to your terminal.

Output Signals
The modem control signals that the port asserts to your terminal.

Input Signals
The modem control signals that your terminal asserts to the port.

Last Char Output
The hexadecimal value of the last character that the port sent to your terminal.

Last Char Input
The hexadecimal value of the last character that the port received from your terminal.

SHOW|LIST PORT SUMMARY

6. TS3395> show port summary

```
Port    Access    Status    Services Offered    18 Apr 1991    12:50:32


 12     Local     Executing Cmd
```

Field   **Means**

Port The number of your terminal server port.

Access   The type of connections the terminal server allows at this port. The types that may appear in this field are these:

Access type	**Means**
Dynamic	Users can gain access to the port through the local terminal server or from a remote host or device on the network.
Local	Users can gain only local access to the port through the terminal server.
Remote	Users can gain only remote access to the port only by service name or port number.

Status   One of the following status modes:

Status	**Means**
Connected	The port is currently connected to a device on the network.
Connecting	The port is currently attempting to connect to a device on the network.
Disconnected	A session was disconnected at this port. This may happen if a session is inactive too long.
Disconnecting	The port is disconnecting from a session.
Executing Cmd	The port is executing a terminal server command.
Idle	The port is not in use. (This status does not appear for a port if you are logged on to that port.)
Local Mode	A user is logged on to a port, and that port is in local command mode.

Services Offered   The names of the local services that the terminal server offers at this port.

SHOW PORT KEYMAP

7. TS3395> show port keymap

```
Address:   00-00-81-FF-4B-15   Name:    XFF4B15              Number:  0
Device: VT100        TerminalType: VT100        Tn3278Type : MODEL2
Keymap:    3270-Key               KeyCode                 Description
           NEWLINE        :   "0A"                     "LF   "
           TAB            :   "09"                     "TAB  "
           BACKTAB        :   "1B 09"                  "ESCTB"
           CURSORUP       :   "1B 5B 41"               "KEYUP"
           CURSORLEFT     :   "1B 5B 44"               "KEYBK"
           CURSORRIGHT    :   "1B 5B 43"               "KEYFW"
           CURSORDOWN     :   "1B 5B 42"               "KEYDN"
           HOME           :   "1B 68"                  "ESCh "
           DELETE         :   "7F"                     "DEL  "
           ERASEEOF       :   "05"                     "CTRLe"
           ERASEINPUT     :   "1B 69"                  "ESCi "
           INSERT         :   "1B 7F"                  "ESCDL"
           FLUSHINPUT     :   "1B 66"                  "ESCf "
           REFRESH        :   "1B 72"                  "ESCr "
           CENTSIGN       :   "1B 63"                  "ESCc "
           DUPLICATE      :   "04"                     "CTRLd"
           FIELDMARK      :   "06"                     "CTRLf"
           SCROLL         :   "1B 6C"                  "ESCl "
           STATUS ON/OFF  :   "1B 3F"                  "ESC? "
           RESET          :   "12"                     "CTRLr"
           FASTLEFT       :   "16"                     "CTRLv"
           FASTRIGHT      :   "15"                     "CTRLu"
           SHOWKEYS       :   "18"                     "CTRLx"
           PRINT          :   "10"                     "CTRLp"
           PF1            :   "1B 4F 71"               "NUM 1"
           PF2            :   "1B 4F 72"               "NUM 2"
           PF3            :   "1B 4F 73"               "NUM 3"
           PF4            :   "1B 4F 74"               "NUM 4"
           PF5            :   "1B 4F 75"               "NUM 5"
           PF6            :   "1B 4F 76"               "NUM 6"
           PF7            :   "1B 4F 77"               "NUM 7"
           PF8            :   "1B 4F 78"               "NUM 8"
           PF9            :   "1B 4F 79"               "NUM 9"
           PF10           :   "1B 4F 50"               "PF1  "
           PF11           :   "1B 4F 51"               "PF2  "
           PF12           :   "1B 4F 52"               "PF3  "
           PF13           :   "1B 21"                  "ESC! "
```

(*continues*)

```
            PF14            :    "1B 40"                    "ESC@ "
            PF15            :    "1B 23"                    "ESC# "
            PF16            :    "1B 24"                    "ESC$ "
            PF17            :    "1B 25"                    "ESC% "
            PF18            :    "1B 5E"                    "ESC^ "
            PF19            :    "1B 26"                    "ESC& "
            PF20            :    "1B 2A"                    "ESC* "
            PF21            :    "1B 28"                    "ESC( "
            PF22            :    "1B 29"                    "ESC) "
            PF23            :    "1B 5F"                    "ESC_ "
            PF24            :    "1B 2B"                    "ESC+ "
            PA1             :    "1B 2C"                    "ESC, "
            PA2             :    "1B 2E"                    "ESC. "
            PA3             :    "1B 2F"                    "ESC/ "
            SYSREQ          :    "1B 73"                    "ESCs "
            ENTER           :    "0D"                       "ENTER"
            CLEAR           :    "03"                       "CTRLc"
            CURSORSEL       :    "1B 6B"                    "ESCk "
            TEST            :    "1B 74"                    "ESCt "
```

Field	Means
Device	The name of the TN3270 device in the display.
TerminalType	The local terminal type.
Tn3270Type	The TN3270 device that the local terminal emulates in a TN3270 session.
Keymap	The table that follows contains the escape sequences that the terminal server uses to translate entries on the local ASCII keyboard into 3270 display station functions.
3270-Key	An IBM display station function.
KeyCode	The hexadecimal value for the keyboard escape sequence at the local terminal which corresponds to the IBM display station function.
Description	A text description of the keyboard function.

Related Commands

This command is useful with the SHOW|LIST PORTS commands:

Command	Function
SET PORT PAUSE ENABLED	Pauses the display after 24 lines of information appear on the screen. The display continues to scroll information when you press the <Return> key.

SHOW|LIST SERVICES
   Display a list of LAT services on the network

The SHOW SERVICES command displays a list of available LAT services on the network, and information about each service. The LIST SERVICES command displays a list of services in the permanent database.

Notes

These commands display only those LAT services that are available to you on the network.

Some ports may not accept commands such as SHOW SERVICES that display network resources. Check with the network manager if you have questions about availability of display commands at your port.

Syntax

```
SHOW SERVICES    [service-name]      [CHARACTERISTICS]
                                     [STATUS]
                                     [SUMMARY]

                 [LOCAL]             [CHARACTERISTICS]
                                     [STATUS]
                                     [SUMMARY]

                 [ALL]               [CHARACTERISTICS]
                                     [STATUS]
                                     [SUMMARY]

LIST SERVICES    [service-name]      [CHARACTERISTICS]
                 [LOCAL]             [CHARACTERISTICS]
```

Abbreviation

```
SH        SERV
LIS
```

Where	Means
service-name	Display information about one or more services that you specify in this variable. If you do not specify a service name, the terminal server displays all services available at this port.
	You can use the asterisk character (*) as a template to select a subset of names with this command. For example, if you entered SHOW SERVICES AB*, the system would display all available names that began with AB. If you entered SHOW SERVICES A*BC, the system would display names that began with A and ended with BC.
ALL	Display a list of all services available at this port. This is the default display for this command.

Where	Means
LOCAL	Display a list of local services offered by the terminal server.
CHARACT-ERISTICS	Display the current values for service characteristics, defined by the network manager
STATUS	Display information about the condition and availability of services.
SUMMARY	Display a one-line summary about the availability of services.

Examples

1. TS3395> show services characteristics

```
 Service: XANADU                                    20 May 1993  14:54:58


 Identification: FINANCEVAX - The Corporate MicroVAX II


 Service:  PRINTER                                  20 Aug 1991  14:54:58


 Identification:  Terminal Server Printer Queue


 Ports:  2, 7


 Rating:  127


 Enabled Characteristics:


 Connections, Queuing
```

Where	Means
Service	The name of the LAT service on the network.
Identification	A text string that identifies the service or describes how to use the service.
Ports	The number of ports that can establish a session with this service.
Rating	The relative capacity of this service to accept sessions. The rating is proportional to the number of ports that offer the service. If no ports offer the service, then the rating is 0.
Enabled Characteristics	The characteristics that the network manager has enabled for the local service. These include the following:

Characteristic	Means
Connections	The terminal server allows connections to the service.
Password	The terminal server requires that users provide a password to establish a session with this service.
Queuing	The terminal server places connection requests in a queue if it cannot fulfill a request immediately.

2. `TS3395> show services status`

```
                                           Service XANADU - 2 Connected

                        Node Name             Status   Rating  Identification

     XANADU            2 Connected     77  Xanadu - The SynOptics Corporate MicroVAX
                                                                                  II
```

Field	Means
Service	The name of the LAT service on the network.
Status	The availability of the service. The status is one of the following:

Status	Means
n Connected	Users can reach the service, and other ports already have *n* currently active sessions with this service.
Reachable	Users can reach the service, and no other ports have currently active sessions with the service.
Unknown	Users could reach the service at one time, but may not be able to now.
Unreachable	Users cannot reach this service, or an attempt to reach this service has timed out.

Field	Means
Rating	The relative capacity of this service to accept additional sessions.
Identification	A text string that identifies the service or describes how to use the service.

3. `TS3395> show services summary`

```
    Service Name        Status      Identification




    FinanceVAX          Available    Finance File Server
    DEVELOPMENTVAX      Available    Devlopment VAX
    PAYROLLHOST         Available
    Accounts_Host       Available    Accounts Receivable
```

Field   **Means**

Service Name   The name of the LAT service on the network.

Status   The entries in this column indicate the availability of the LAT services to users on the network. These entries are possible in this column:

                 Available   Users can establish sessions with this service on at least one node that offers it.

                 n Connected   Users can establish sessions with the service, and *n* sessions are currently active at this service.

                 Unavailable   Users cannot establish sessions with this service.

                 Unknown   None of the nodes that offers this service are reachable.

Identification   A text string that identifies the LAT service, or describes how to use the service.

Related Commands

The SHOW|LIST SERVICES commands provide information that is useful with these commands:

Command	Function
LAT CONNECT	Establishes a session with a LAT service.
CONNECT	Establishes a session with a LAT service or Telnet destination.
SET PORT PAUSE ENABLED	Pauses the display after 24 lines of information appear on the screen. The display continues to scroll information when you press the <Return> key.

SHOW   SESSIONS
Display a list of active sessions

The SHOW SESSIONS command displays a list of all active sessions at your port. The list includes session numbers and other information.

Notes

Use this command when you have two or more active sessions, and you need to know the number of a session to disconnect it or reopen it. This command is also useful if you need to know the service mode of a session. If you enter this command in a Multisessions window, the display does not include session numbers for those sessions currently being displayed in another window.

UNIX alias: JOBS [PORT *port-list*]

Syntax

```
SHOW SESSIONS    [PORT port-list]
```

Abbreviation

```
SH SES [PO]
```

Where   **Means**

port-list   Display the active sessions at the port you specify in this variable. Users at Secure ports can only enter their own port numbers.

Example

```
TS3395> show sessions
```

```
 Port 12: lynne            Service Mode     Current Session 3
 - Session 1: Connected    Interactive      FINANCE.SUN.COM
 - Session 2: Connected    Interactive      PAYROLLVAX
 - Session 3: Connected    Interactive      UNIX.HOST.COM
```

Field   **Means**

Port *n*   The number of the terminal server port.

username   The name you used to log on to this port, or the name the network manager assigned to the port with the DEFINE or SET PORT USERNAME command.

Service Mode   The port mode, which is either Service Mode or Local Mode.

Session *n*   The session number.

Field	Means
status	The connection status of the session. The types of status are the following:

Status	Means
Connected	The port has an active session with a LAT service or a Telnet destination.
Connecting	The port is attempting to connect to a LAT service or a Telnet destination.
Disconnected	The port has disconnected from a session. (A port may disconnect from a session after it has been inactive for a certain period of time.)
Disconnecting	The port is disconnecting from a session. (A port may disconnect from a session after it has been inactive for a certain period of time.)
Queued at *n*	The position in the connection queue for a LAT service or Telnet destination.

Field	Means
Service Mode	The data transparency mode for the current session at this port. The service modes that can appear in this field are the following:

Service Mode	Means
Interactive	The terminal server recognizes all control characters.
Passall	The terminal server passes all characters as data.
Passthru	The terminal server recognizes the XON and XOFF characters, but passes all other characters as data.
Transparent	The terminal server ignores Telnet option messages received from a remotely initiated Telnet session and does not send any Telnet options messages from a locally initiated Telnet session. For LAT sessions, the terminal server operates in Passthru mode at the local port, but tells its connection partner it is operating in Passall mode.

Field	Means
destination (node)	The LAT service or Telnet destination associated with a session. If the name of the LAT service differs from the name of the node that offers the service, the display shows the name of the node within parentheses. If the destination is a domain name that is too long to fit in the display, the terminal server truncates the domain name and display an asterisk (*) to indicate that it truncated the name.
	If the destination name reflects a remote access connection to the port, the name is that of the LAT service requested by the remote port, and the node name is the requesting node.

Field	Means
Telnet options	If a second line of session information appears, it indicates Telnet options. These are features that the terminal server negotiates for a Telnet session, and include Echo and Binary. When these option names are preceded by "Do" or "Don't," they reflect whether or not the Telnet destination will perform these options. When these option names are preceded by "Will" and "Won't," they reflect whether or not the terminal server will perform these options.

Related Commands

The SHOW SESSIONS command provides information that is useful with these commands:

Command	Function
RESUME	Reopens the session you specify with a session number or the previous session.
BACKWARDS	Reopens the next lower-numbered session.
FORWARDS	Reopens the next higher-numbered session.
DISCONNECT	Terminates the session you specify with a session number.

TELNET CONNECT
    Establish a session with a Telnet destination

The TELNET CONNECT command establishes a session with a Telnet destination. Use the SHOW DESTINATIONS or SHOW DOMAIN commands to obtain a list of Telnet destination names and Internet addresses on your network.

Notes

TELNET CONNECTIONS: The terminal server may take a few seconds to establish a Telnet connection to a domain name after it has been initialized. During this time, the server is attempting to locate the Domain Name Server, look up the Internet address for the domain name, and then make the connection. Subsequent attempts to connect to that Telnet host occur without delay, because the terminal server has a record of the Telnet address for that domain name.

If you enter the TELNET CONNECT command without a domain name or an Internet address, the terminal server searches for a predefined preferred Telnet service. The SHOW PORT CHARACTERISTICS display lists the Preferred Services, if any, at your port.

TN3270 CONNECTIONS: You can use an Internet address or a domain name to reach an IBM host and establish a TN3270 session. Once you make the connection, the terminal emulates an IBM 3270 display station. See Chapter 4 for more information about TN3270 terminal emulation.

UNIX alias: OPEN   [*domain-name*[:*telnet-port-number*]]
                                          [*internet-address*[:*telnet-port-number*]]

Syntax

```
TELNET [CONNECT] [domain-name[:telnet-port-number]]
                          [internet-address[:telnet-port-number]]
```

Abbreviation

```
TEL [C]
```

Where	Means
domain name-	Establish a session with the Telnet host you specify in this variable. A domain name can contain up to four segments, each separated by a period.
internet- address	Establish a session with the device at the address in this variable. An Internet address consists of four numbers, separated by periods.
:telnet-port- number	Establish a session using the number of an Internet protocol or the port number on a Model 3395/3395A Terminal Server you in this variable. You must precede the port number with a colon (:) to separate it from the domain name or the Internet address. Valid port numbers are the whole numbers 1 through 32767.

Examples

These examples show how you can use the TELNET CONNECT command with different keywords and variables to establish a session with a Telnet destination. Example 4 shows a TN3270 connection.

1. This command uses the domain name FINANCESUN.SYNOPTICS.COM.

```
TS3395>  telnet connect financesun.synoptics.com
TS3395  -010-  Session 4 to FINANCESUN.COM established
  Welcome To FINANCESUN

  Please log on.
```

2. This command has no domain name or Internet address. In the absence of this information, the terminal server searches for a predefined preferred destination. In this example, the preferred destination is a Telnet host named ACCOUNTSHOST.COM.

```
TS3395>  telnet connect
TS3395  -010-  Session 5 to ACCOUNTSHOST.COM established
  This is ACCOUNTSHOST.COM

        Please enter your username:
```

If the network manager has not defined a preferred destination, the message *Preferred service has not been defined* appears on the screen. If this happens, see your network manager, or enter a TELNET domain name with the TELNET CONNECT command.

3. This command uses the Internet address 128.10.2.30 and the Telnet port number 23.

```
TS3395>  telnet connect 128.10.2.30:23
TS3395  -010-  Session 6 to 128.10.2.30:23 established
  Welcome to DevelopmentSUN.COM

  Please log on.
```

4. This command uses a Telnet domain name to reach an IBM host. Once the connection is established, the terminal emulates an IBM 3278 style terminal, and the terminal's keyboard responds like the IBM keyboard.

```
TS3395>  telnet connect ibmhost.com
TS3395  -010-  Session 3 to IBMHOST.COM established
  This is IBMhost.COM

  Username:
```

Related Commands

These commands provide functions that are useful with or similar to the TELNET CONNECT command:

Command	Function
SHOW DESTINATIONS	Displays a list of LAT services and Telnet destinations on the network.
SHOW DOMAIN	Displays a list of learned and static Telnet domain names on the network.
CONNECT	Establishes a session with a LAT service or a Telnet destination.
RLOGIN	Establishes as session with a host if the host has been configured for an RLOGIN implementation. (This command may require a log on password as well as a host name.)
DISCONNECT	Terminates a session between the terminal server port and a device on the LAN.

XCONNECT
   Establish a session with an XDM host

The XCONNECT command attempts to establish a session with an XDM host for terminal servers with the Xremote protocol enabled.

Notes

Not all terminal servers have the Xremote protocol enabled. If it is enabled, you can either provide the domain name or Internet address of an XDM host in the command line, or simply enter the XCONNECT command. If you enter the command without specifying a host, the terminal server searches the permanent database for a host that was specified with the DEFINE PORT XDM host command, or uses the BROADCAST query type.

Syntax

```
XCONNECT [domain-name /internet-address]
```

Abbreviation

```
XCO
```

Where   **Means**

[*domain-name*]   The domain name of the XDM host.

[*internet-address*]   The Internet address of the XDM host.

Examples

1. This command has no domain name or Internet address, and the terminal server locates an XDM host.

```
TS3395> xconnect
```

```
Welcome to the Xwindow System


 Login:

 Password:

```

2. A user enters the XCONNECT command with an Internet address. The terminal server locates the XDM host at that Internet address.

```
TS3395> xconnect 143.129.80.200
```

```
Welcome to the Xwindow System



Login:

Password:
```

Related Commands

This command is useful with the XCONNECT command:

Command	Function
SHOW PORT CHARACTERISTICS	Indicates whether the Xremote protocol is enabled for this port in the Enabled Characteristics field.

The ZERO COUNTERS command resets the port counters to zero. Use the SHOW PORT COUNTERS command to display the counters at your port.

Notes

Users at Secure and Nonprivileged ports can only reset the counters of their own ports. These ports require that you use the PORT keyword and the *port-list* variable to specify your port number.

The SHOW PORTS COUNTERS command displays the current values of all port numbers, and the number of seconds that have elapsed since the port counters were last reset to zero.

Syntax

```
ZERO COUNTERS    PORT port-list
```

Abbreviation

```
Z C PO
```

Where	Means
PORT	Reset the counters at the port in the *port-list* variable to zero.
port-list	Reset the counters of the port you specify in this variable to zero. Secure and Nonprivileged users must specify their own port number.

Example

This command resets the counters on port 3 to zero.

```
TS3395> zero counters port 3

TS3395>
```

Related Commands

This command is useful with the ZERO COUNTERS command:

Command	Function
SHOW PORT COUNTERS	Displays the current values for port counters.

You can establish sessions over the LAN with an IBM host through the terminal server if the host has a Telnet server that supports the TN3270 protocol. When you log on to the IBM host, the terminal server software redefines the functions of the keys on your terminal's keyboard to emulate those of an IBM 3270 Model 5 or Model 2 display station. This chapter includes these topics:

• Checking the TN3270 characteristics at your port

• Establishing a TN3270 session with an IBM host

• Using hot keys

• Keyboard maps

Checking the TN3270 Characteristics at Your Port

Before you attempt to establish a connection with an IBM host, check the settings of the TN3270 characteristics at your port with the SHOW PORT TELNET CHARACTERISTICS command. This display shows the following information:

• The device your terminal emulates once you log on to the IBM host. The terminal server software includes the VT100, VT220-7, VT220-8, and ANSI device types, but the network manager at your site may have created other types.

• The translation table for the language your port uses during the TN3270 session.

Figure 4-1 shows a SHOW PORT TELNET CHARACTERISTICS display with typical settings for the TN3270 characteristics. The display at your port may be different.

```
Port 12:  john                         18 June 1993  14:35:55


Abort Output Character:       None    Newline:                CR/NULL
Attention Character:           ^W     Newline Filtering          None
Default Port:                  23     Query Character:           None
Echo Mode:                  Remote    Remote Port:               3200
Erase Keystroke Character:    None    Synchronize Character:     None
Erase Line Character:          ^K     Transmit:            Immediate
Interrupt Character:          None    Binary Session Mode:    PASTHRU
Terminal Type                 None    Tn3270 Device           VT220-7
Tn3270 TranslationTable   USENGLSH    Tn3270 printer port         Any


Enabled Characteristics:


Tn3270 EOR, Tn3270 XtdAttrs
```

Figure 4-1. A SHOW PORT TELNET CHARACTERISTICS display set for TN3270 connections

In Figure 4-1, the TN3270 translation table in column one is set to USENGLSH, which is the default setting for this characteristic. The TN3270 device in column two is set to VT220-7, but the setting at your

---

port could be VT100, VT220-8, ANSI, or a another type defined by the network manager. The list of Enabled Characteristics includes TN3270 EOR, TN3270 ErrorLock, and TN3270 XtdAttrs.

Note: If the TN3270 characteristic is not enabled, you can still establish a session with an IBM host, but your keyboard will not function properly and the screen will be incorrectly formatted.

Using the SHOW PORT KEYMAP Command

The SHOW PORT KEYMAP command, described in Chapter 3, displays the translation table of 3270 keyboard functions and the corresponding keys for those functions on your terminal. The table also includes the hexadecimal value for those keys, although you do not need these values for regular keyboard use. Tables 4-1, 4-2, and 4-3, at the end of this chapter also show 3270 keyboard functions and the corresponding keys on terminal types that are included in the software.

Establishing a TN3270 Session with an IBM Host

Use the CONNECT or TELNET CONNECT commands to establish a session with an IBM host through a Telnet server. You can use a domain name or an Internet address as the destination name in the command. In the following example, a user enters the CONNECT command to establish a session with the IBM host FNC.BOSTON.COM. (Notice that the IBM host name is in Telnet domain name format). Figure 4-2 represents the type of screen that can appear:

```
TS3395> connect fnc.boston.com
```


Figure 4-2.   A sample IBM logon screen

On this screen, the cursor appears at the USERID prompt.

Once the terminal server establishes a session with the IBM host, the terminal server software begin IBM 3270 terminal emulation. To check the functions of keys during a session, use the <CTRL><X> key sequence. This key sequence displays a table similar to the SHOW PORT KEYMAP display. Tables 4-1, 4-2, and 4-3 at the end of this chapter show 3270 keyboard functions and the corresponding keys on terminal types that are included in the software.

Note: If you are using a personal computer (PC) and running terminal emulation software, this software may not match every IBM display station key to the corresponding key on your keyboard.

Using Hot Keys

Most terminals have screens that display twenty-four lines, while IBM Model 5 stations display twenty-seven lines plus a status line, and IBM Model 2 stations display twenty-four lines plus a status line. To view the extra display lines and the status lines, you use *hot keys*. When you press a hot key, the terminal displays the hidden display lines or the status line. When you press it again, the hidden lines disappear.

The Scroll Lower key

To view the three extra display lines on an IBM Model 5 display station screen, use the Scroll Lower function key. The Scroll Lower key changes the display from the top twenty-four lines (1-24) to the bottom twenty-four lines (4-27). Using the Scroll Lower key again returns the display to lines 1-24. The Scroll Lower keys for the predefined keyboard maps are these:

```
VT100/102 and ANSI          ESC L

VT220/7-bit                 <CTRL><O>

VT220/8-bit                 <CTRL><O>
```

The network manager can change the predefined key sequence, so the Scroll Lower key sequence on your terminal may be different.

The Status Key

To view the status line on an IBM Model 2 or Model 5 display station, use the Status key. (On Model 5 this is the twenty-eighth line of the screen; on Model 2 this is the twenty-fifth line of the screen.) To view this line, use the Status key that applies to your terminal's keyboard map:

```
VT100/102 and ANSI          ESC ?

VT220/7-bit                 <CTRL><W>

VT220/8-bit                 <CTRL><W>
```

The network manager can change the predefined key sequence, so the Status key sequence on your terminal may be different.

Keyboard Maps

Tables 4-1, 4-2, and 4-3 show the IBM 3270 terminal functions and the corresponding VT100 and ANSI, VT200-7, and VT200-8 keys. Check with your network manager about other keymaps at your site.

Table 4-1.   VT100/102 and ANSI 3.64   keyboard map

IBM 3270 Terminal Function	VT100/102 and ANSI Terminal Key Sequence
Back Tab	ESC TAB
CentSign	ESC C
Cursor Down	Down Arrow (↓)
Cursor Left	Left Arrow (←)
Cursor Right	Right Arrow (→)
Cursor Up	Up Arrow (↑)
Clear	CTRL-C
Cursor Sel	ESC K
Delete	Delete
Dup (Duplicate)	CTRL-D
Enter	Return
Erase EOF	CTRL-E
Erase Input	ESC I
Fast Left	CTRL-V
Fast Right	CTRL-U
Field Mark	CTRL-F
Flush Input	ESC F
Home	ESC H
Insert Mode	ESC Delete
New Line	Linefeed
PA1	ESC ,
PA2	ESC .
PA3	ESC /
PF1	Numeric 1
PF2	Numeric 2
PF3	Numeric 3
PF4	Numeric 4
PF5	Numeric 5
PF6	Numeric 6
PF7	Numeric 7
PF8	Numeric 8
PF9	Numeric 9
PF10	PF1
PF11	PF2
PF12	PF3
PF13	ESC !
PF14	ESC @
PF15	ESC #
PF16	ESC $

IBM 3270 Terminal Function	VT100/102 and ANSI Terminal Key Sequence
PF17	ESC %
PF18	ESC ^
PF19	ESC &
PF20	ESC *
PF21	ESC (
PF22	ESC)
PF23	ESC _
PF24	ESC +
Print	CTRL-P
Refresh	ESC R
Reset	CTRL-R
Scroll Lower	ESC L
ShowKeys	CTRL-X
Status ON/OFF	ESC ?
Sys-Req	ESC S
Tab	Tab
Test	ESC T

Table 4-2.   VT220/7-bit keyboard map

IBM 3270 Terminal Function	VT220-7 Terminal Key Sequence
Back Tab	FIND
CentSign	CTRL-N
Clear	CTRL-C
Cursor Down	Down Arrow (↓)
Cursor Left	Left Arrow (←)
Cursor Right	Right Arrow (→)
Cursor Up	Up Arrow (↑)
Cursor Sel	CTRL-K
Delete	Delete (Arrow in box)
Dup (Duplicate)	CTRL-D
Enter	Return
Erase EOF	CTRL-E
Erase Input	Remove
Fast Right	CTRL-U
Fast Left	CTRL-V
Field Mark	CTRL-F
Flush Input	ESC F
Home	CTRL-H
Insert Mode	Insert Here
New Line	Select
PA1	F18
PA2	F19
PA3	F20
PF1	Numeric 1
PF2	Numeric 2
PF3	Numeric 3
PF4	Numeric 4
PF5	Numeric 5
PF6	Numeric 6
PF7	Numeric 7
PF8	Numeric 8
PF9	Numeric 9
PF10	PF1
PF11	PF2
PF12	PF3
PF13	F6
PF14	F7
PF15	F8
PF16	F9
PF17	F10
PF18	F11
PF19	F12
PF20	F13
PF21	F14

IBM 3270 Terminal Function	VT220-7 Terminal Key Sequence
PF22	Help
PF23	Do
PF24	F17
Print	CTRL-P
Refresh	Previous Screen
Reset	CTRL-R
Scroll Lower	CTRL-O
ShowKeys	CTRL-X
Status ON/OFF	CTRL-W
Seq	Next Screen
Tab	Tab
Test	CTRL-T

Table 4-3. VT220/8-bit keyboard map

IBM 3270 Terminal Function	VT220-8 Terminal Key Sequence
Back Tab	FIND
CentSign	CTRL-N
Cursor Down	Down Arrow (↓)
Cursor Left	Left Arrow (←)
Cursor Right	Right Arrow (→)
Cursor Up	Up Arrow (↑)
Clear	CTRL-C
Cursor Sel	CTRL-K
Delete	Delete (Arrow in box)
Dup (Duplicate)	CTRL-D
Enter	Enter
Erase EOF	CTRL-E
Erase Input	Remove
Fast Right	CTRL-U
Fast Left	CTRL-V
Field Mark	CTRL-F
Flush Input	ESC F
Home	CTRL-H
Insert Mode	Insert
New Line	Select
PA1	F18
PA2	F19
PA3	F20
PF1	Numeric 1
PF2	Numeric 2
PF3	Numeric 3
PF4	Numeric 4
PF5	Numeric 5
PF6	Numeric 6
PF7	Numeric 7
PF8	Numeric 8
PF9	Numeric 9
PF10	PF1
PF11	PF2
PF12	PF3
PF13	F6
PF14	F7
PF15	F8
PF16	F9
PF17	F10
PF18	F11
PF19	F12
PF20	F13
PF21	F14
PF22	Help

IBM 3270 Terminal Function	VT220-8 Terminal Key Sequence
PF23	Do
PF24	F17
Print	CTRL-P
Refresh	Previous Screen
Reset	CTRL-R
Scroll Lower	CTRL-O
ShowKeys	CTRL-X
Status ON/OFF	CTRL-W
Sys Req	Next Screen
Tab	Tab
Test	CTRL-T

Chapter 5
Using the Multisessions Feature

Some DEC terminals, such as VT330 and VT420 terminals, support a feature called multisessions, or dual session management. This feature enables a terminal to process and display two sessions simultaneously, within separate windows. This chapter describes how to use a terminal that supports multisessions, and includes these topics:

• Managing sessions within windows

• Using terminal server commands within windows

• Using session management characters within windows

For general information about DEC terminals that support multisessions, see the DEC documentation for each terminal type. For information about how to use this feature with other products and applications, see the documentation for those products and applications.

Note: MULTISESSIONS is the DEC server characteristic that controls the port where the terminals are connected. This characteristic does not affect the multiple session support feature of the Model 3395/3395A Terminal Server, which is available to all terminal server users.

Managing Sessions Within Windows

When you log in to a multisessions port, the terminal creates two windows where you can establish and manage sessions. By default, each window occupies an entire screen, or page. In full page mode, you switch between pages with the F4 function key. You can split the screen to view both windows simultaneously, however, with the <CTRL><F4> key sequence. See the documentation for your VT330 or VT420 terminal for more information about how to set up windows and alter the characteristics of the display within each window.

Most terminal server commands behave the same way from within multisession windows as they do from a regular terminal screen. Some differences exist, however, and these are described in the section "Using Terminal Server Commands Within Windows," later in this chapter.

You may be able to split the screen vertically, horizontally, or both. This chapter shows examples using a horizontally split screen. The information here is also applicable to terminals with a vertically split screen, or to terminals using an entire screen for each window. Figure 5-1 represents a terminal with a horizontally split screen.
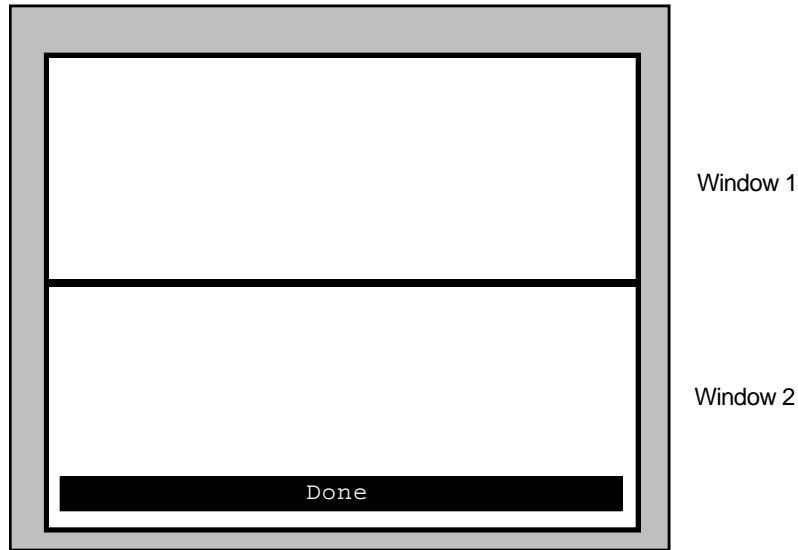
Figure 5-1. An example of a split screen

When a screen is split horizontally, as it is in Figure 5-1, the multisessions terminal always assumes the top window is window 1, and the bottom window is window 2. When a screen is split vertically, the left window is window 1 and the right window is window 2. If the screen is not split, the multisessions software considers the first page as window 1 and the second as window 2. Use the F4 key to move the cursor to a different window.

The multisessions terminal tracks the current session according to the window where it appears. If the session appears in window 2, the terminal considers the session number 2, even if the Model 3395/3395A Terminal Server session number is 1 or 3. The multisessions software always opens the first session in window 1.

Establishing the First Session

When the "Done" message appears at the bottom of the terminal screen, press the <Return> key. The "Service Name=" prompt appears at the bottom of the screen, whether it is split or not:

```
Service  Name =
```

This prompt is part of the multisessions user interface, and you use it to establish the first session in each window.

At the "Service name=" prompt, enter a LAT service name, a Telnet domain name, or an Internet address. The terminal server interprets your entry as a LAN destination and use it in a CONNECT command. When the terminal server establishes a session, the multisessions software displays the session in window 1. If your terminal server has a preferred service already defined, you can simply press the <Return> key at the "Service name=" prompt.

Figure 5-2 shows an example of how a split screen might look after you entered the Telnet domain name Payroll.Host.Com at the "Service Name=" prompt:

```
            Welcome to Host Payroll Database

            Employee:   JONES
            Function:   RAISE
            Amount (%): 25


            Next: █
```

Window 1

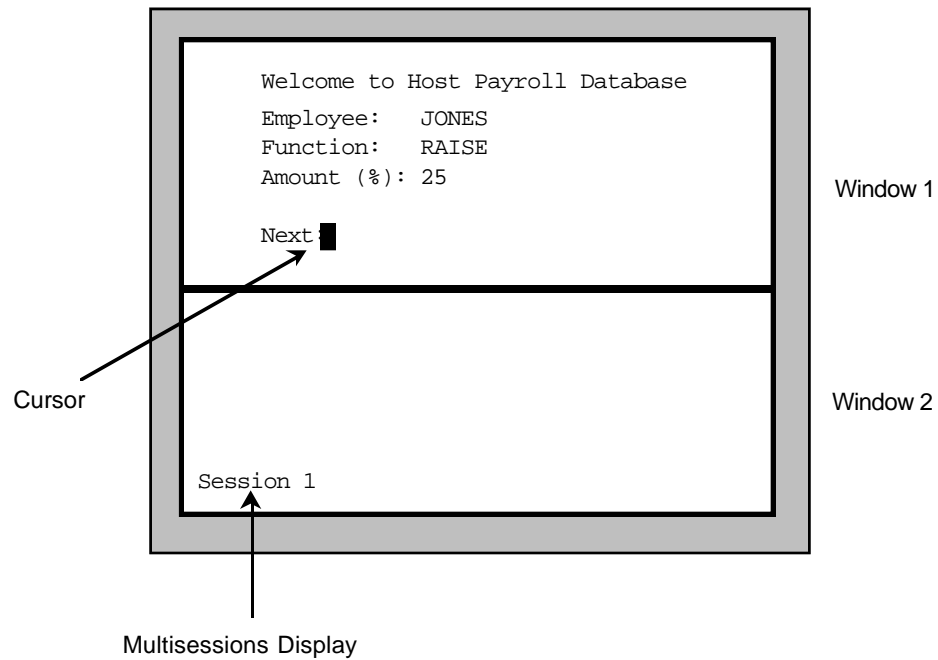Cursor

Window 2

Session 1

Multisessions Display

Figure 5-2.   A multisessions screen with one session established

Once you establish a session in a window, you can work within it, just as you would on any other terminal. If you log off, however, the TS3395> prompt appears rather than the multisessions prompt. If you want to establish another session in that window, enter a terminal server connect command, such as CONNECT.

You can override the multisessions interface and bring up the Model 3395/3395A command interface in two ways. You can enter the name LOCAL at the multisessions prompt, and this calls up the TS3395> prompt. Or, if no preferred service exists, you can press the <Return> key several times at the multisessions prompt, which calls up the TS3395> prompt.

Establishing the Second Session

You can establish a second session in the first window, or in the second window. To establish a second session in the first window, suspend the current session and the TS3395> prompt appears on the screen. You can then enter a terminal server connect command, such as CONNECT, just as you would at a regular terminal. When you establish the second session this way, it appears in window 1.

To establish the second session in window 2, press the F4 key to move the cursor to window 2. The "Service Name prompt=" appears at the bottom of the screen. Enter the name of a LAT service, a Telnet domain, or an Internet address. Figure 5-3 shows an example of what a split screen would look like if you entered PersonnelVAX at the "Service Name=" prompt in window 2 with an active session in window 1.
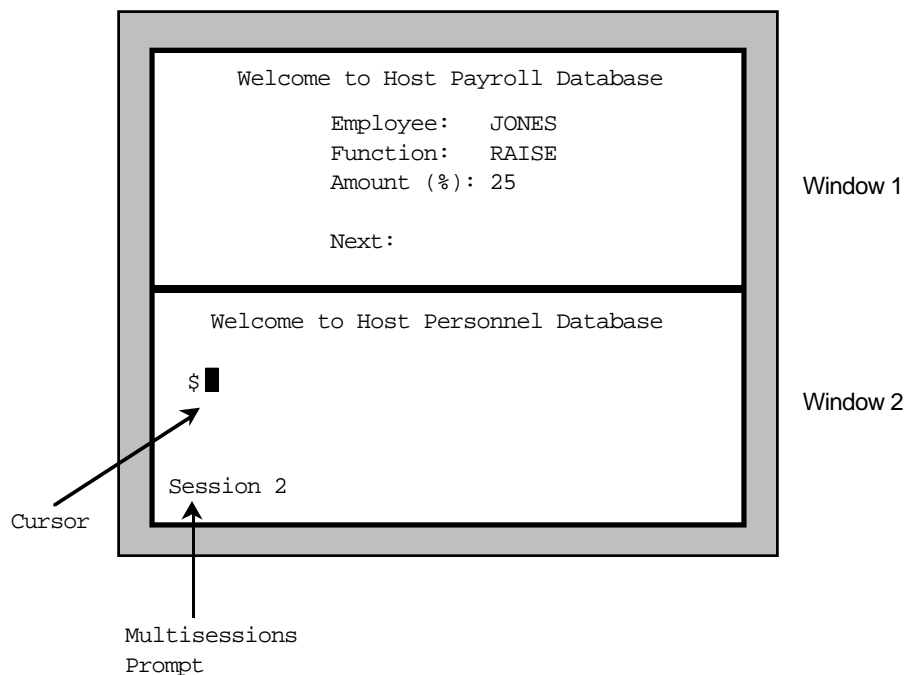
Figure 5-3. A multisessions screen with two sessions established

Both sessions are active in Figure 5-3, but the session in window 2 is the current session. Once you establish a session in a window, you can work within it just as you would on any other terminal. If you log off, however, the TS3395> prompt appears rather than the multisessions prompt. If you want to establish another session in that window, enter a terminal server connect command.

Establishing Three or More Sessions

To establish a session when you have active sessions in both windows, suspend the current session, or log off of it if you are finished working there. When you do the TS3395> prompt appears on the screen, and you can enter terminal server commands such as CONNECT. Use the F4 key to move the cursor between windows.

Remember that the session number in the lower-left corner of the screen is the multisessions window number, not the Model 3395/3395A Terminal Server session number. You could have four active sessions, and reopen session 3 in window 1 and session 4 in window 2. If the cursor appears in window 1, the session number on the screen will be 1 to reflect the multisessions window number, not the terminal server session number.

You need the terminal server session number to disconnect from sessions. You can reopen sessions that were not established in the current window with a session number or a destination name. Use the SHOW SESSIONS command to display the active session numbers for those sessions that do not currently appear in a window.

Logging Out of the Terminal Server Port

To log out of the terminal server port, enter the LOGOUT command from the TS3395> prompt. If you do not disconnect all sessions in all windows, the terminal server software terminates them when you log out of the port.

Using Terminal Server Commands Within Windows

The multisessions windows share the terminal server's command processor. You can enter terminal server commands at either window, but not both windows simultaneously. You could establish a session in one window with the CONNECT command, and then establish another session in the second window with another CONNECT command. You could then suspend the first session and use the SHOW SESSIONS command to view your active session numbers.

Some terminal server commands behave differently when you use them from within multisession windows than when you use them from terminals without windows. The basic functions, however, remain the same. This section describes how the following commands function when you enter them from within multisession windows:

BACKWARDS
CONNECT
DISCONNECT
FORWARDS
RESUME
SHOW SESSIONS
SHOW/LIST PORT CHARACTERISTICS

For more information on any of these commands, see the full command descriptions in Chapter 3.

BACKWARDS

The BACKWARDS command reopens the next lower-numbered session that does not already appear in a window. The session you reopen with the BACKWARDS command appears in the window where you entered the command. For example, a port could have four active sessions, numbered 1, 2, 3, and 4. Session 2 appears in the top window, and session 3 appears in the bottom window. If you suspend session 3 and enter the BACKWARDS command from the TS3395> prompt, the terminal server reopens session 1 in the bottom window. It does not reopen session 2 because this session already appears in the top window.

The terminal server records session numbers sequentially in a rotating list, just as it does at regular terminals. If you enter the BACKWARDS command from the lowest-numbered session, the terminal server reopens the next highest-numbered session that is not being displayed.

CONNECT

You can enter this command from the TS3395> prompt, from within a window, when no connection is active in the window. The TS3395> prompt appears in each window after you have established the first session for a window from the "Service name=" prompt.

DISCONNECT

When using multisessions, the DISCONNECT command can terminate sessions from within the active window, another window, or terminate all sessions, depending on the arguments you use with it. If you enter the command without arguments the terminal server terminates the current session within the window where you entered the command.

If you enter the command with a session number, the terminal server terminates that session, even if you opened it in another window:

    DISCONNECT *[session-number]*

If you enter the command with the ALL keyword, the terminal server terminates all sessions at the port:

    DISCONNECT ALL

FORWARDS

The FORWARDS command reopens the next higher-numbered session that does not already appear in a window. The session you reopen with the FORWARDS command appears in the window where you entered the command. For example, a port could have four active sessions, numbered 1, 2, 3, and 4. Session 3 appears in the top window, and session 2 appears in the bottom window. If you suspend session 2 and enter the FORWARDS command from the TS3395> prompt, the terminal server reopens session 4 in the bottom window. It does not reopen session 3 because this session already appears in the top window.

The terminal server records session numbers sequentially in a rotating list, just as it does at regular terminals. If you enter the FORWARDS command from the highest-numbered session, the terminal server reopens the next lowest-numbered session that is not being displayed.

RESUME

The RESUME command reopens the previous session from within the window when you enter it, if you enter it without arguments. When you enter the RESUME command with a session number, host name, or service name, it reopens the session you specify at the window where you entered the command, even if you did not establish the session from that window.

The RESUME command does not reopen a session that currently appears in a window. If you attempt to do this, an error message appears on the screen.

SHOW SESSIONS

When the MULTISESSIONS characteristic is enabled at a port, the SHOW SESSIONS command displays the window number where a session appears. Figure 5-4 shows a sample SHOW SESSIONS display with MULTISESSIONS enabled.

```
 Port 12 john            Service Mode       Current Session 1
 1  Session 1: Connected  Interactive        FINANCEVAX
 -  Session 2: Connected  Interactive        DEVELOPMENTVAX
 2  Session 3: Connected  Interactive        DEVELOPMENTSUN
 -  Session 4: Connected  Interactive        PAYROLLHOST
```

Figure 5-4.   A sample show sessions display with multisessions enabled

The left-most column of the Show Sessions display indicates the window number where the session is active. If a session is active but does not appear in a window, it does not have a window number. In Figure 5-4, Session 1 appears at window 1, and Session 3 appears at window 2. In the upper right corner, the display shows that session 1 is the current session.

SHOW/LIST PORT CHARACTERISTICS

When the MULTISESSIONS characteristic is enabled at a port, the LIST/SHOW PORT CHARACTERISTICS display indicates this. The MULTISESSIONS characteristic appears in the list of enabled characteristics at the bottom of the display.

Using Session Management Characters Within Windows

You can use session switching and Telnet management control characters from within windows, just as you would at a terminal that did not support the MULTISESSIONS characteristic. The local switch character calls up the Model 3395/3395A command processor at the window where you hit the character. The forward switch and backward switch characters behave somewhat differently from within windows, and these differences are described below. Chapter 2 explains session management control characters in detail.

All VT330 and VT420 terminals have a <Break> key. If the <Break> key is set to LOCAL at your port, you can use it to suspend a session in a window, just as you would on a terminal without windows.

Backward Switch

The backward switch character reopens the next lower-numbered session that does not already appear in a window. The session you reopen with the backward switch character appears in the window where you entered it. For example, a port could have four active sessions, numbered 1, 2, 3, and 4. Session 2 appears in the top window, and session 3 appears in the bottom window. If you enter the backward switch character at session 3, the terminal server reopens session 1 in the bottom window. It does not reopen session 2 because this session already appears in the top window.

The terminal server records session numbers sequentially in a rotating list, just as it does at regular terminals. If you enter the backward switch character at the lowest-numbered session, the terminal server reopens the next highest-numbered session that is not being displayed.

Forward Switch

The forward switch character reopens the next higher-numbered session that does not already appear in a window. The session you reopen with the forward switch character will appear in the window where you entered the command. For example, a port could have four active sessions, numbered 1, 2, 3, and 4. Session 3 appears in the top window, and session 2 appears in the bottom window. If you enter the forward switch character at session 2, the terminal server reopens session 4 in the bottom window. It will not reopen session 3 because this session already appears in the top window.

The terminal server records session numbers sequentially in a rotating list, just as it does at regular terminals. If you enter the forward switch character from the highest-numbered session, the terminal server will reopen the lowest-numbered session that is not being displayed.

Chapter 6
Transferring Files With a Personal Computer

A personal computer, or PC, that runs terminal emulation software and has a serial port can run on the terminal server in the same way as a terminal. This chapter explains how to transfer files between a PC and a host or another PC on the LAN through the terminal server. The topics in this chapter include the following:

• File transfer procedure

• Transferring a file with the Kermit file transfer program

File Transfer Procedure

These are the basic steps you use to transfer files between a PC and a host. The way you apply these steps to your situation will vary, depending on the hardware and software you use and the types of files you transfer. No matter what your environment is, however, you will follow this general procedure:

1. Ensure that both the PC and the host have the same file transfer program, and that the PC is running a terminal emulation program. (Some file transfer programs, such as PC Kermit, combine both the file transfer and terminal emulation functions).

2. Establish a session with the host on the network. To do this, you need to log on to the terminal server port, use a terminal server connect command to reach the host, and log on to the host.

3. Set the data transparency of the session to PASSALL if the file transfer program requires it. To do this, suspend the session and return to Model 3395/3395A local command mode and use the SET SESSION command.

        TS3395> set session passall

4. Start the file transfer program on the remote host, if it is not already running there.

5. Exit from the terminal emulation program and return to the PC operating system, if necessary. If you are using MS/DOS, for example, you will see the C: prompt. If your file transfer program combines terminal emulation and file transfer, you may not have to do this.

6. Run the file transfer program and send the file. The file transfer program will behave as if the PC is directly connected to the host.

7. Exit from the file transfer program on the host, and terminate the session with the host.

8. Exit from the file transfer program on the PC.

The next section of this manual shows an example of a file transfer using these steps with the Kermit file transfer program. Before you use the Kermit program or any other file transfer program, consult the documentation for that program.

Transferring a File With the Kermit File Transfer Program

This section describes a file transfer from a PC to a host with the Kermit file transfer program. In this example, the user Chris, at a PC running MS/DOS, sends a spreadsheet to a LAT service on the host FinanceVAX. Figure 6-1 represents a file transfer such as this:
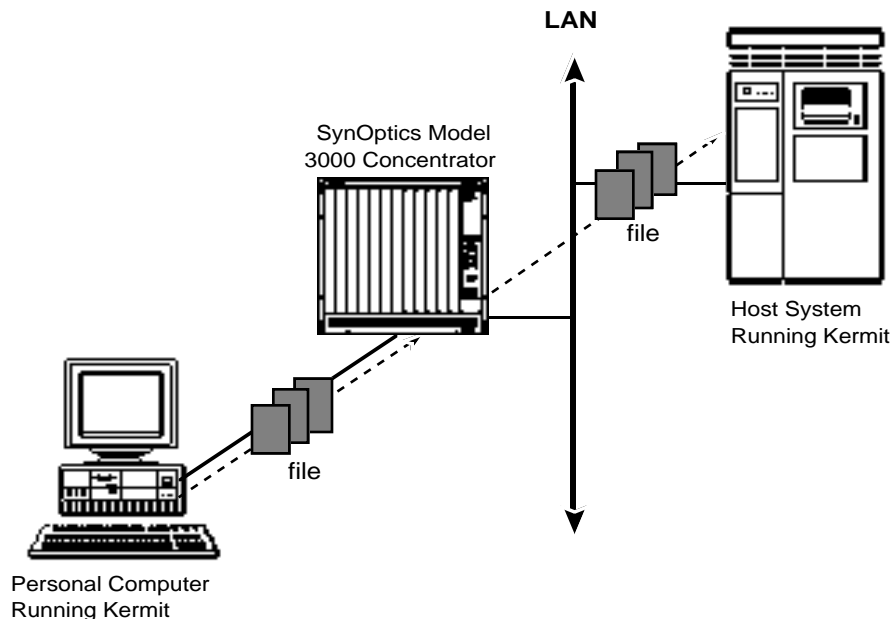
Figure 6-1.   A file transfer from a host computer to a PC

In Figure 6-1, both the PC and the host are running the Kermit file transfer program, and the PC sends a file to the host through the terminal server. The following example shows how you can apply the steps in the basic procedure to this type of transfer.

1. Ensure that both the PC and the host are running the same file transfer program, and that the PC is running a terminal emulation program.

    From the PC DOS prompt, Chris brings up the Kermit program. When the PC invokes the Kermit program, it displays the Kermit prompt.

    ```
    C:\> kermit

    Kermit-MS>
    ```

2. Establish a session with the host on the network.

   Chris selects the PC serial port that is connected to the terminal server port, sets the port speed, and enters a CONNECT command to establish a session with the terminal server:

   ```
   Kermit-MS> set port 1

   Kermit-MS> set speed 9600

   Kermit-MS> connect

   Enter Username> chris

   TS3395>
   ```

   Chris now establishes a session with FinanceVAX with a CONNECT command, and logs on:

   ```
   TS3395> connect financevax

   TS3395 -010- Session 1 to FINANCEVAX established

   Welcome to Finance Department VAX

   Username: Chris

   Password:  xxxxxxx
   ```

   (The password does not appear on the screen.)

3. Reset the data transparency of the session, if the file transfer program requires it.

   Chris will transfer a spreadsheet, so he uses the <Break> key to suspend the session and the SET SESSION command to set the data transparency to PASSALL. He then resumes the session with FinanceVAX.

   ```
   $ <Break>

   TS3395>

   TS3395> set session passall

   TS3395>

   TS3395> RESUME

   $
   ```

4. Start the file transfer program on the remote host, if it is not already running there.

    Chris starts up Kermit on FinanceVAX:

    ```
    $  RUN  applications:KERMIT

    VMS KERMIT - 32 version 3.2.076-a
       Default terminal for transfers is: _VTA463:
    ```

    (In this example, a directory called "applications" contains the Kermit program. The organization of directories and files varies on different hosts. Check with your network manager to determine the location of the file transfer program on a LAT service or other host.)

5. Exit from the terminal emulation program and return to the PC operating system.

    In this example, the Kermit program displays a message telling the user how to do this. Chris enters the appropriate escape sequence and invokes the local PC operating system.

    ```
    Kermit Server running on VAX/VMS host.  Please type your escape
    sequence to return to your local machine.  Shut down the server
    with the Kermit BYE command on your local machine.

    Kermit-32> <CTRL>/<]> <C>

    Kermit-MS>
    ```

6. Run the file transfer program and send the file.

    From the PC, Chris enters the Kermit SEND command and the filename Finance_Report. The Kermit program responds with information and status about the file transfer:

    ```
    Kermit-MS> SEND Finance_Report

       File name:          Finance_Report
       KBytes transferred: 113
       Percent transferred: 100%
       Sending:            Completed

       Number of packets:  1706
       Number of retries:  0
       Last error:         None
       Last warning:       None

    Kermit-MS>
    ```

    (To retrieve a file from the host, the command is GET *filename*.)

7. Exit from the file transfer program on the host and terminate the session with the host.

    To end the file transfer session, Chris first enters the Kermit FINISH command at the PC to notify the host that he has no more files to transfer. Then he connects to the Kermit program on FinanceVAX , and shuts it down. He then logs off of FinanceVAX.

    ```
    Kermit-MS> connect

    Kermit-32>

    Kermit-32> exit

    $

    $ LOGOFF

    TS3395>

    TS3395> logout

    TS3395>
    ```

8. Exit from the file transfer program on the PC.

    Chris logs out of the terminal server and the PC Kermit prompt appears on the screen. He then exits from PC Kermit.

    ```
    TS3395> logout

    Kermit-MS>

    Kermit-MS> exit

    C:\>
    ```

You can use this method to transfer a file between any personal computer or workstation and any host. If the target device is another PC, however, the PC must be defined as a LAT service and it must already be running Kermit in terminal server mode.

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