DECserver 500

digital

Use

Order Number: AA–HU81D–TK

DECserver 500

Use

December 1989

This guide describes all nonprivileged server commands. It is for users of interactive terminals connected to DECserver 500, 510, and 550 ports.

NOTE: If your port is assigned to use just one service, you do not need a reference guide.

Supersession/Update Information:	This is a revised manual.
Software Version:	DECserver 500 V2.0

This manual applies to Version 2.0 of DECserver 500 software and all subsequent maintenance releases up to the next major product release.

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Preface

Using This Guide

The *DECserver 500 Use* guide is a tutorial introduction to basic server use, including descriptions of all server commands and port characteristics that users can set at non-privileged ports.

NOTE

If you want to skip the introductory conceptual information and start using the server right away, turn to Chapter 2.

Intended Audience

This guide is for users of interactive terminals connected to ports on DECserver 500, 510, and 550 hardware. The DECserver 500 software runs on all three hardware products. The guide is intended only for users who have access to the server's local mode.

The guide is primarily for — but not limited to — users of Digital terminals. For example, users of IBM 3270 Information Display System terminals connected to Digital's 3270 Terminal Option port on the server can also use this guide. The 3270 Terminal Option system lets IBM 3270 terminals emulate Digital's VT terminals. Users of such terminals can turn to this guide for more in-depth server information than is contained in the *3270 Terminal Option Use* manual.

Structure of This Manual

This manual contains the following chapters:

Chapter 1	Describes how to use the DECserver 500 software in a network environment, using Digital VT-series terminals. Defines terms used in this guide, provides guidelines for entering server commands, and describes server messages. Also lists the new features provided by DECserver 500 V2.0 software.
Chapter 2	Describes how to log in and log out of the server, how to begin and end sessions with a service, and how to display on-line help documentation.
Chapter 3	Explains how to create several sessions on one port and how to switch between them.
Chapter 4	Explains how to use the CONNECT command to establish sessions with services on specific nodes and ports.
Chapter 5	Explains how to use SHOW commands to display information about the server, ports, service nodes, network services, sessions, users, and queue entries.
Chapter 6	Explains how to use SET commands to change port and session characteristics. Includes information about defining switch characters, specifying automatic connection to a preferred service, setting your port's physical characteristics to match those of the attached terminal, enabling or disabling session management (TD/SMP), and changing other characteristics.
Chapter 7	Explains how to transfer files between your personal computer (PC) and a service.
Chapter 8	Explains how to lock your terminal to protect existing sessions, how to test your terminal and port connection, and how to broadcast a message to another port.
Chapter 9	Describes the available features and restrictions for terminals supporting session management, a feature that allows multiple sessions to process data simultaneously.
Chapter 10	Alphabetically lists all DECserver 500 software nonprivileged user commands and user-definable port characteristics.

Other Manuals for Terminal Server Users

The following documents contain information relevant to nonprivileged server users:

- *Terminal Server User's Reference Card*

  Describes and gives examples of the most frequently used DECserver 500 commands.

- *Terminal Server Commands and Messages*

  Describes the usage and syntax of all terminal server commands. Also lists and describes all status and error messages issued by the server.

- *DECserver 500 Commands Quick Reference*

  Summarizes all privileged and nonprivileged server commands and characteristics in a quick reference format.

- *Terminal Server Glossary*

  Defines terms used in terminal server documentation.

Associated User Manuals

The following documents are for users of IBM 3270 Information Display System terminals connected to DECserver 510 and 550 hardware and using the 3270 Terminal Option product.

- *3270 Terminal Option Use*

  Explains how to use 3270 terminals to access resources on the Ethernet local area network and how to access IBM resources on a local IBM cluster control unit.

- *3270 Terminal Option Keyboard Quick Reference Card*

  A quick reference that helps IBM 3270 terminal users determine which keys to press on their keyboard to simulate keys on a VT keyboard.

NOTE

For information about ordering documents, refer to the section "How to Order Documents" at the end of this guide.

DECserver 500 On-Line Documentation

The following on-line help documentation is available:

- Tutorial HELP

  Provides basic information about logging in and using the server.

- Command reference HELP

  Provides detailed information on how to use all the server commands at your privilege level.

- Limited HELP (command syntax only)

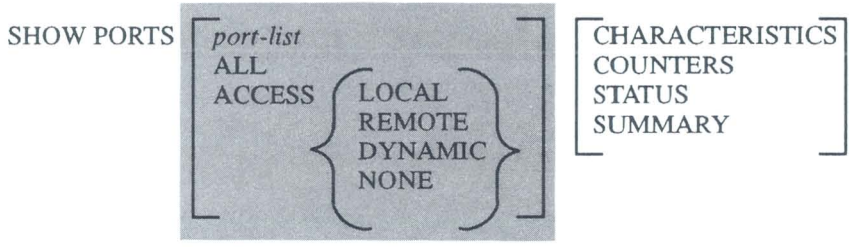
  If the server manager enables LIMITED HELP (enabled by default), HELP lists the command syntax only. It excludes command descriptions.

Graphic Conventions Used in This Guide

Convention	Meaning
`Special type`	This special type indicates system output or user input. System output is in black type; user input is in red type.
UPPERCASE	Uppercase letters in command lines indicate keywords that you must enter. You can enter keywords in either uppercase or lowercase. You can abbreviate keywords to the smallest number of characters that distinguish the keyword to the server.
lowercase italics	Lowercase italics in command syntax or examples indicate variables for which either the user or the system supplies a value.
BOLD	In port characteristic syntax, bold type indicates default values.
bold	In text, bold type indicates a new term or concept that is defined in the glossary.
{ }	Braces in command syntax statements indicate that you must specify one and only one of the enclosed values. Do not type the braces.
[ ]	Square brackets in command syntax statements indicate that the enclosed value(s) are optional. You can enter none or one. Default values apply for unspecified options. Do not type the brackets.

Shaded text	Shaded text indicates commands and options that cannot be used on secure ports. (Secure ports are defined in Chapter 1.)
[*key*]	Press the specified key. For example, [RET] means that you should press the RETURN key.
[CTRL/*x*]	Hold down the CONTROL key and then press the key specified by *x*. The server displays this key combination as ^*x*.

Sample syntax statement:



For this command, you must specify the keywords SHOW and PORT(S). The shading indicates that nonsecure users can further qualify PORTS with a list of ports or with the keyword ALL or ACCESS. If you specify ACCESS, you must also include either LOCAL, REMOTE, DYNAMIC, or NONE. All users can specify one or none of the four display formats shown in the last set of brackets. Defaults apply for unspecified options. Read the command descriptions for any restrictions.

1

Introducing the DECserver 500 Software

The DECserver 500 software runs on terminal servers with DECserver 500, 510, or 550 hardware. Terminal servers (also referred to as servers) connect to an Ethernet local area network (LAN) and allow devices such as terminals, printers, modems, and computers to access the network.

1.1 Interacting with the Server

If your terminal is attached to the server, you can log in and interact directly with it. When you log in to the server, you enter the server's **local mode** environment. In local mode, you can enter server commands. For example, you can command the server to connect your terminal to resources on the network, to display server-related information, or to change the operating characteristics of your terminal.

1.2 Connecting to Network Services

Any resource on the network that you can access through the server is called a **service.** When you connect to a service, you leave local mode and enter the server's **service mode** environment. A service often consists of all the resources of a computer system. Other examples of services are a file storage system, an application program running on a computer system, or a modem connected to a server.

In service mode, you enter commands at the prompts issued by the system offering the service. If the service is a computer system, your terminal appears directly connected to the system. You enter the commands known to that system. You can return to local mode any time.

1.3 Advantages of Using the Server

The server software lets you connect your terminal remotely over the LAN to several services instead of directly to a single host computer. You gain three major advantages by using the server:

- From one terminal, you can readily connect to and use the services of any computer system known to the server. Once you log into one of the computer systems, you can use application programs and utilities as if connected directly to that computer system. (A computer system on the LAN that offers services is called a **service node.**)

- Once connected to a service node, you can suspend the current interactive service connection (called a **service session**) and open another session with the same service node or a different service node. You can then use that service, suspend it, and return to the first session, picking up where you left off. You can establish up to eight simultaneous service sessions (the server manager can limit you to fewer than eight).

  By allowing you to establish multiple sessions, the server saves you the time normally required to close out and reopen files or accounts and to return to the same point in the session.

- You do not depend solely on the availability of a single host computer. A single service can be offered by more than one service node, and a single service node can offer more than one service.

  Consider a set of VMS computer systems that can operate separately or as part of an interconnected group of computers called a VAXcluster. You can connect to a specific VAX system in the cluster by specifying its name, or you can connect to the cluster in general by specifying the cluster name. In the latter case, the server automatically connects you to the least busy VMS system on the cluster.

  If the service node you are currently using goes off line for any reason, you can simply access a different service node that offers the same service. If the service node is a VAXcluster, the session will automatically switch to another service node in the cluster that offers the same service.

1.4 Server Ports and Supported Devices

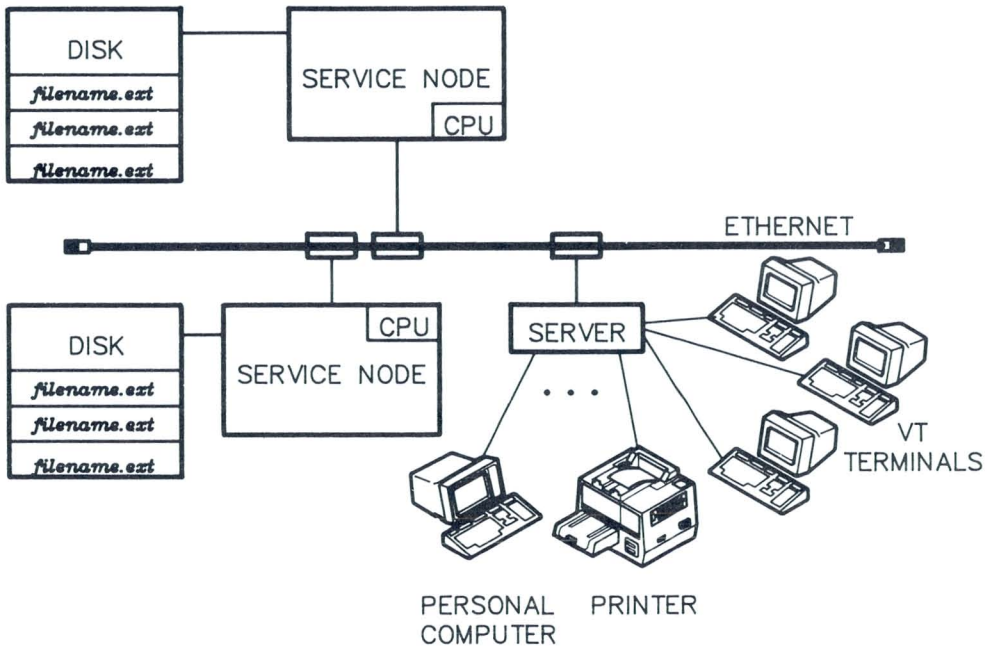
Your terminal is attached to the server at a connection called a **port;** each server can have up to 128 ports (16 ports for the DECserver 510 hardware). You can define characteristics for your terminal's port to control the operation of your terminal. For example, you can define your port so that when you log in to the server, your terminal automatically connects to a specific service on the network.

Other devices, such as computers and printers, can be attached to server ports. For example, the server manager can set up a port to offer an attached printer as a service. The server manager can let users access this printer from their terminals.

Thus, the server can establish service sessions for its terminals while also acting as a service node that offers one or more services. When the offered service is a personal computer (PC) or keyboard printer, the device can alternate on demand as (1) a terminal to use for establishing sessions with services and (2) a service.

Figure 1–1 shows a server connecting terminals, printers, and personal computers to a LAN.

Figure 1–1: Server Connecting Terminals, Printers, and PCs to a LAN



1.5 Interacting with Multiple Service Sessions

When you have connections to several service sessions, you interact with one service session at a time — your **current session**. You can move easily between service sessions without having to return to local mode and without having to disconnect or log out of your current session. All noncurrent service sessions remain active even though terminal input and output (I/O) are suspended. If you leave a service to interact with another service, you can return later to the first service.

When you return to local mode, the server suspends terminal I/O for your last (current) session. However, that service session is still considered your current session until you create or resume another session.

1.6 Session Management and Multiple Service Sessions (TD/SMP)

Some terminals support **session management** (multiple sessions with simultaneous exchange of data) with use of the **Terminal Device/Session Management Protocol (TD/SMP)**. With this feature, the terminal output of two or more sessions can continue simultaneously regardless of which session is current. Some terminals also allow you to display the output of multiple sessions concurrently on a divided display screen. For example, you can compare the output of several programs, or you can edit a file on one part of your screen while you view a directory of other files on another part. The terminals can maintain user-defined keys and device attributes independently for each session.

Session management has two major benefits:

1. Enhanced productivity. For example, two service sessions can process simultaneously, regardless of which session is current. The data exchange of one session is not interrupted when you switch to another session or switch to local mode.
2. Simultaneous display of output for two sessions.

Chapter 9 further describes the session management facility.

1.7 Automatic Recovery from Service Node Failure

When the connected service node fails, the server responds by attempting to connect to the same service on another service node. This failure-recovery function is called automatic **failover.** The server attempts automatic failover only if the service you are using is offered by two or more service nodes (as with a VAXcluster service). When automatic failover is successful, you receive the log-in prompt of another service node.

If failover is unsuccessful or if the service is offered by only one node, and if the AUTOCONNECT characteristic is enabled on your port (see Chapter 6), the server periodically tries to reconnect you to the requested service.

If a requested service is busy and queuing is enabled for connection requests to the service node, the server queues your connection request at the service node instead of periodically trying to reconnect. A **connection queue** is a list of connection requests waiting for attention from the service node. The queue ensures that your connection request is processed on a first-come, first-served basis.

Queued connection requests are honored before unqueued connection requests (such as autoconnect requests). Also, the queue responds immediately when the requested service becomes free. In contrast, autoconnects are initiated periodically, regardless of the availability of the service node. When the initial connect is rejected for reasons other than the service being busy, queuing does not occur but autoconnect can occur.

You can interrupt the AUTOCONNECT function by returning to local mode (press the BREAK key or your local switch character). If session management is in effect on your terminal, AUTOCONNECT and failover functions for any noncurrent service sessions continue without interruption when you switch to another session.

1.8 Fair Access to Services

If two or more service nodes offer the same service, the connection request goes to the node with the highest **service rating** — that is, the node that is least busy. If the service nodes have similar ratings and one of the nodes already has a connection, that node will most likely receive the request. In this way, the server does not have to establish a new circuit for the connection. The SHOW SERVICES command displays the service ratings of each service on each service node (see Chapter 5).

If you request a connection to a service offered by a terminal server and the service is busy, your connection request is put in a connection queue on that server (this assumes that the two conditions discussed here are met). Your connection request is then processed on a first-come, first-served basis. Thus, the queue ensures you fair access of terminal server resources in the network.

If you request a connection to a service offered by ports on two or more servers and all ports on those servers are busy, your connection request is queued at the server that is most capable of processing your request first.

Queuing of your connection request occurs only if:

- The server that offers your service permits queuing of connection requests for that service.

  and

- Queuing is enabled for your terminal's port on your server. (Use the SET PORT QUEUING command to enable or disable queuing. See Chapter 6.)

Without this queuing feature, each attempt to connect to a busy service is rejected (you would receive a message indicating why your connection attempt failed), and you must keep trying to connect until the service is free. Service is granted to the first user requesting a connection after the service becomes free. So, even if you are the first user to try connecting to the service, you are not guaranteed first access.

1.9 Guidelines for Entering Server Commands

This guide describes all commands available to *nonprivileged* users of interactive terminals on a server. All terminals on server ports have access to a basic group of commands that permit users to establish and manage service connections. This group of commands is called the nonprivileged command set.

The server manager can set some ports to access only a subset of the nonprivileged command set. These ports are called **secure ports.** Users of these ports are called **secure users.** Secure users can use all the commands needed for connecting to services, but they cannot change all the port characteristics that users of nonsecure ports can change. Also, secure users can access only limited display information and cannot use the broadcast feature that is available to other nonprivileged users.

NOTE

The nonprivileged commands and characteristics that are unavailable on secure ports are shaded in this guide.

Use the following guidelines for entering server commands:

- You can enter up to 84 characters in a command line.
- You can continue a command line onto a second screen display line provided you do not press the RETURN key at the end of the first display line.

- You can abbreviate command keywords to the smallest number of characters that distinguish the keyword to the server.
- You cannot type ahead in local mode. If you type ahead while the server is sending local-mode output to the terminal, a beep sounds and your input characters are ignored. (To disable the beep, see LOSS NOTIFICATION in Chapter 6.) You can interrupt local-mode output by pressing the BREAK key. (If you are entering commands in local mode, the BREAK key is ignored.) If you have disabled the BREAK key, you can interrupt local-mode output by pressing CTRL/O or your local switch character (see Chapter 6).
- You can use the following special keys when you enter commands:

Key	Function
DEL	Deletes the last character entered in the current command line.
CTRL/U	Deletes the entire current command line.
CTRL/Z	Operates like CTRL/U except when entered in response to a password prompt or to a password verification prompt. In these cases, CTRL/Z cancels the password processing and causes the server to return to local mode. Exception: CTRL/Z cannot unlock a locked terminal (see Chapter 8).
CTRL/R	Retypes the current command line (useful after using DEL on a hard-copy terminal).
RET	Executes the current command line.

The server processes each field in a command line until it reaches the end of the line or until it encounters an error, in which case it displays an error message.

1.10 Server Messages

The server issues three types of messages:

1. **Information messages** report events within the server or on the network. For example, such messages might confirm that you are starting, resuming, or disconnecting a service session.

2. **Error messages** report problems that prevent the server from executing all or part of a command. The problem can be with the command itself (such as an invalid parameter) or with the server or network (such as failure to make a connection).

3. **Warning messages** report events that you might not expect or desire as the result of a command you or the server manager have entered, such as warning of a system shutdown initiated by the server manager.

Because server messages are self-explanatory, they are not listed in this guide. A complete list appears in the *Terminal Server Commands and Messages* reference.

2

Getting Started

This chapter shows how to use the most common server commands.

2.1 Logging In to the Server

Press the RETURN key several times until you get a response from the server. The server response depends on how your server manager has configured your port. The first response from the server can be one of the following:

- A pound sign (#)
- A log-in message and a user name prompt
- A log-in message and the local prompt

The following sections explain how to respond to your server's initial response.

NOTE

If the server does not respond, check that your terminal is connected properly, turned on, and running correctly (see instructions that came with the terminal). If the terminal has a problem, contact field service. If the terminal has no problem and the server still does not respond, contact your server manager.

2.1.1 Pound Sign (#)

If your server prompts you with a pound sign (#) enter the log-in password assigned by your server manager, as shown in the following example. (For security, the password is not displayed.)

```
# password RET (not displayed)
```

If you enter the password correctly, the server displays a log-in message and issues a prompt. The prompt issued depends on whether your server manager has defined a permanent user name for your port,

- Local prompt: If the server displays a local prompt, you can begin entering server commands. A user name is assigned permanently to your port.
- User name prompt: If the server prompts you for a user name (Enter username>), enter a user name for your port.

2.1.2 Log-In Message and User Name Prompt

If the server prompts you for a user name, enter one of the following responses:

- A 1- to 20-character name that identifies you to other users on the server
- CTRL/Z to assign the port name as your user name
- HELP to display tutorial information on how to use the server and its facilities

In the following example, the user enters "Phil" as the user name.

```
DECserver 500 Terminal Server V2.0 - LAT V5.1
PLM's Server - Don't forget to lock terminal when unattended

Please type HELP if you need assistance

Enter username> Phil RET

Local>
```

When you see the local prompt, you are logged in to the server. You can enter server commands whenever this prompt is displayed.

In this example, the line starting with "PLM's Server" is your server's identification, which is set up by the server manager. The server manager uses the message to advise users to lock their terminals when unattended. This protects your terminal from unauthorized use. Chapter 8 discusses the LOCK command.

NOTE

If you are connected to the server through a modem-controlled port, you must respond to the log-in password prompt and the user name prompt within 60 seconds. If you fail to enter the correct password or user name during this period, the server disconnects the modem.

2.1.3 Log-In Message and Local Prompt

If the server's first response is the log-in message and a local prompt, you can begin entering server commands. In the following example, the user enters the CONNECT command to request the server to connect the terminal to the service BUGLE. Section 2.3 and Chapter 4 describe the CONNECT command.

```
DECserver 500 Terminal Server V2.0 - LAT V5.1
Inventory Office, 3rd Floor

Please type HELP if you need assistance

Local> CONNECT BUGLE RET
```

NOTE

Command examples hereafter do not show RET at the end of command lines. You must always press the RETURN key to execute a server command.

The examples in the book assume that Local> is the local prompt. However, your server manager can define a different local prompt.

2.2 Accessing On-Line Help

There are two kinds of on-line documentation: tutorial Help and command reference Help.

To obtain tutorial information, enter the HELP command in response to the user name prompt (Enter username>), or enter HELP TUTORIAL in response to the local prompt. For example:

```
Enter username> HELP
```

or

```
Local> HELP TUTORIAL
```

The server responds with a series of screens of tutorial information. At the end of each screen, you can press the RETURN key to pass to the next screen, or you can enter a question mark (?) followed by RET to start again with the first screen. Press CTRL/Z at any time to exit from HELP. Whenever you enter tutorial HELP, the server begins with the first screen.

To access on-line reference information for the server commands described in this guide, enter the HELP command in response to the local prompt.

```
Local> HELP
```

The server displays a list of command keywords and, unless your server manager has enabled LIMITED HELP, the server prompts again, as shown here. If LIMITED HELP is enabled, you see the command keywords only.

```
Topic?
```

When you enter a command keyword from the list, such as SET, the server briefly describes the function of the keyword and lists any subtopics associated with it. The server then prompts you for a subtopic. For example:

```
SET Subtopic? PORT
```

In response to this entry, the server lists all SET PORT options and prompts again for a subtopic. If you already know which option you want, you can skip these intermediate steps by requesting specific HELP information at the local prompt. For example, to access information about specifying flow control, you can enter this command:

```
Local> HELP SET PORT FLOW CONTROL
```

At any HELP prompt, you can enter one of several responses:

- To redisplay the options that you can enter in response to a prompt for a topic or subtopic, enter a question mark (?) and press the RETURN key.
- To return to the previous HELP prompt, press the RETURN key.
- To exit from HELP, press CTRL/Z.

If you need help solving a server problem, see your server manager. Your server manager can use the *DECserver 500 Problem Solving* manual to locate the cause of the problem.

2.3 Establishing a Service Session

To initiate a service session, enter the CONNECT command with the name of the service you want. For example:

```
Local> CONNECT SALES
```

To find the names of all services that you can access, enter the SHOW SERVICES command at the local prompt (see Chapter 5).

Once your connection is established, you are prompted by the service. You remain in service mode until you log out of the service or until you switch to local mode. If the node offering the service terminates the session, a message displays and your terminal returns to local mode (see the exception described in Section 1.7).

2.3.1 Establishing Sessions with Services That Require a Password

Some protected services prompt you for a password. To establish a session with such services, you must enter the password established by the server manager. To preserve security, the password is not displayed on your terminal when you type it.

```
Password> password (not displayed)
```

If you fail to enter the correct password, the server prompts you for it again. Reenter the password, or return to the local prompt by pressing CTRL/Z or the BREAK key.

2.3.2 Establishing a Session with Your Preferred Service

If you establish a session with the **preferred service** for your terminal's port, then you do not have to specify a service name when you enter the CONNECT command. Also, you can set up your terminal's port to automatically connect (**autoconnect**) to your preferred service when you log in to the server. Chapter 6 explains how to enable these features.

2.3.3 Queuing a Connection Request for a Service

If your connection request is queued because the service is busy, and the service is offered by another terminal server, your server displays messages at your terminal.

The following is a sample of queuing messages that your server might display after you try to connect to a service that is busy. In this example, the busy service is PRINTER. Your server informs you that the connection cannot be established and why. Then the server informs you of the position of your connection request in the queue of the server that offers PRINTER. The next three messages are periodic updates informing you of your request's position in the queue. When your request is processed, the server sounds a beep at your terminal and displays a message informing you that you are connected to the service PRINTER on service node TLAT16 (a server):

```
Local> CONNECT PRINTER
Local -232- Connection to PRINTER not established
               Service in use
Local -017- Queued at position 005 to PRINTER on node TLAT16
Local -017- Queued at position 004 to PRINTER on node TLAT16
Local -017- Queued at position 003 to PRINTER on node TLAT16
Local -017- Queued at position 001 to PRINTER on node TLAT16
Local -010- Connection to PRINTER on node TLAT16 established
```

While your connection request is queued, you cannot switch sessions without cancelling your queued connection request. If you want to switch to another service session or connect to another service, you must end the queued connection request by either pressing the BREAK key or the defined local switch character (see Chapter 6). However, if session management is in effect on your terminal, you can switch sessions or connect to another service without cancelling your queued connection request.

2.4 Returning to Local Mode from Service Mode

To return to local mode without ending your service session, press either the BREAK key or your local switch character.

ATTENTION: DIAL-IN MODEM USERS

Check with your server manager to see whether you are connected to the server by a dial-in modem that interprets the BREAK signal as a command to end the dial-in connection to the server. If so, your server manager can suggest a local switch character to use in place of the BREAK key when you want to return to local mode. You can find the local switch character in the characteristics display produced by the SHOW PORT command (see Chapter 5).

2.5 Resuming Your Current Session from Local Mode

To resume your current session, enter the RESUME command.

```
Local> RESUME
```

When you resume a service session, the server displays the service name and the session number (unless you have disabled VERIFICATION on your port). You must press the RETURN key to display your service node prompt or, if you did not exit the session at a prompt, you must press a system-specific key to redisplay your screen. The keystroke required to refresh your screen depends on the application running on the service node. For example, if you exited your session while in VMS edit mode, press CTRL/W to refresh your screen.

2.6 Ending a Session

To end the current session while in local mode, enter the DISCONNECT command.

```
Local> DISCONNECT
```

Some services permit you to log out of the service node while in service mode. Doing so also ends the current session and returns you to local mode.

2.7 Logging Out of the Terminal Server

To log out of the server, enter the LOGOUT command. The server displays a logout message indicating your port and server name.

```
Local> LOGOUT
   Local -020- Logged out port 3 on server TSDEV
```

The LOGOUT command disconnects all your existing sessions. If a modem controls the line between your terminal and the server port, the server forces the modem to disconnect the phone when you log out.

3

Using Multiple Service Sessions

The DECserver 500 software allows you to have more than one session active at once. You can establish sessions with different services, and you can establish multiple sessions with the same service. However, you can interact with only one session at a time.

The server manager determines the number of sessions that your port can support at one time. If you try to exceed your session limit, the server displays an error message. If you get such an error message, you must disconnect a service session before you can create a new one.

NOTE

This chapter assumes that your terminal does not support session management or, if it does, that the MULTI-SESSIONS characteristic is disabled. When your terminal is under control of session management, the following commands have a different meaning:

- BACKWARD
- FORWARD
- RESUME
- DISCONNECT
- LOGOUT

Chapter 9 describes how these commands differ with session management.

3.1 Establishing Additional Sessions

To establish another service session, return to local mode by pressing either the BREAK key or your local switch character. Then enter the CONNECT command and specify the name of the service you want. For example:

```
Local> CONNECT MICRO
```

If the service is busy, your request might be queued (see Chapter 2).

3.2 Switching to Service Sessions from Local Mode

You can return to any service session from local mode. To return to your current session, enter the RESUME command. To return to a specific session, enter the RESUME SESSION command and specify the session number.

```
Local> RESUME SESSION 1
```

Each session on your port has a unique session number. To display the list of service sessions on your port, enter the SHOW SESSIONS command.

```
Local> SHOW SESSIONS

Port 8: Leslie Davies        Local Mode       Current Session: 3
- Session 1: Connected       Interactive       SALES              (VMS2)
- Session 2: Connected       Interactive       VMS2
- Session 3: Connected       Passall           MICRO
- Session 4: Connected       Interactive       VMS2
```

Service sessions are listed in numeric order. If the service node name differs from the service name, the node name is shown in parentheses after the service name. Your current session (the last one you used) is identified at the top right.

In the preceding sample list, "Passall" means that the service session was set to ignore switch characters and flow control characters (see Chapter 7). "Interactive" means that these special characters are interpreted normally.

To return to the session following the current one in the list, enter the FORWARD command. To return to the session preceding the current one, enter the BACKWARD command.

```
Local> FORWARD
Local> BACKWARD
```

In the preceding example, where 3 is the current session, the FORWARD command resumes session 4 and the BACKWARD command resumes session 2. When the current session is last on the list, the FORWARD command resumes the session at the top of the list. Likewise, when the current session is at the top of the list, the BACKWARD command resumes the session at the bottom.

NOTE

Whenever you reenter a session, either you must press the RETURN key to display your service node prompt, or, if you did not exit the session at a prompt, you must press a system-specific key to redisplay your screen. The keystroke required for refreshing your screen depends on the application running on the service node. For example, if you exited your session while in VMS edit mode, press CTRL/W to refresh your screen.

3.3 Switching Service Sessions in Service Mode

You can switch service sessions in service mode by using forward and backward switch characters. These characters move you through sessions in the same order as the FORWARD and BACKWARD commands. See Chapter 6 for information about setting switch characters.

NOTE

Switch characters are ignored if your session is set to PASSALL or PASTHRU mode (see Chapter 7). They are also ignored if your terminal is under control of session management.

3.4 Disconnecting Noncurrent Sessions

While you are in local mode, you can disconnect any service session. To end your current session (the last one you used), enter the DISCONNECT command. To end a session that is not current, enter the DISCONNECT SESSION command and specify the session number. For example, to end session 2, enter the following command:

```
Local> DISCONNECT SESSION 2
```

To end all your service sessions, enter the DISCONNECT ALL command.

```
Local> DISCONNECT ALL
```

4

Connecting to Specific Nodes and Ports

The simplest way to use the CONNECT command is to enter CONNECT and the name of a service. If, for example, the service MICRO offers the use of one of several personal computers (PCs) on several terminal servers, then the CONNECT MICRO command connects you to a PC on the server with the largest number of those PCs available.

You can also use the CONNECT command to connect to a service at a specific service node or server port. For example, you can connect to a particular PC offered by MICRO by specifying the server name and port number where that PC is attached.

Examples:

```
Local> CONNECT MICRO NODE SERVER3 DESTINATION MICRO 1
```

This example requests a connection to service MICRO on node SERVER3 at port MICRO_1.

```
Local> CONNECT MICRO NODE SERVER2
```

This example requests a connection to service MICRO at any port on service node SERVER2.

Syntax:

CONNECT [*service-name* [NODE *node-name*] [DESTINATION *port-name*]]

service-name	Specifies the service to which you want to connect. You must specify a service name unless you want to connect to a preferred service (see Chapter 6).
NODE *node-name*	Specifies a node offering the service to which you want to connect. Use SHOW SERVICE *service-name* to display the nodes offering the specified service or ask your server manager (see Chapter 5). If you omit NODE but specify DESTINATION, the server connects you to a port on your local server. If you omit both parameters, the server connects you to a port on the highest-rated node offering the service.
DESTINATION *port-name*	Specifies a port to which you want to connect on your local server or a remote server (see your server manager for the port names). If you specify DESTINATION without NODE, you are connected to the specified port on your server only if your server offers the service you specify.

When you use the NODE or DESTINATION parameter, the node or port must offer the specified or preferred service and must be currently available. Automatic fail-over (see Chapter 1) does not work for sessions established in this way. However, if AUTOCONNECT is enabled (see Chapter 6) and the service disconnected abnormally (such as by a failure of the service node), the server attempts to reconnect your service session.

The server manager can use passwords to protect certain services, such as those that offer dial-out modems. To connect to these services, you must enter the required password.

When a connection request completes, you receive the log-in prompt of the service (if it issues one). If a connection does not complete, the server returns an explanatory message.

5

Displaying Information

You can use SHOW commands to display characteristics and status information from the server's current, operational database, including any changes you have made using SET commands.

You can select one of several different display types for each command. Each type displays different information. The following display types are most useful to you. (Certain display types are not valid with some SHOW commands. For example, you cannot specify any of these display types with the SHOW SESSION command.)

- CHARACTERISTICS — Displays current settings of all definable characteristics for the specified entity.
- STATUS — Displays detailed information about the current status of the specified entity.
- SUMMARY — Provides a brief summary of information about the specified entity, including name, status, and ID.
- COUNTERS — Displays the values of counters that show the number of times certain events occurred since you reset the counters to zero.

The following SHOW commands are most useful to you:

- SHOW NODE(S)
- SHOW PORT

```
DECLIT AA CROSS HU81D

DECserver 500 use
```

- SHOW SERVICE(S)
- SHOW SESSION(S)

The following command descriptions use the graphic conventions described in "Using This Guide."

SHOW DEVICES — Displays information about one or all devices on the server.

Syntax:

SHOW DEVICES [*device-name* | ALL] [CHARACTERISTICS | COUNTERS | STATUS | SUMMARY]

device-name — Displays information for the specified device only. Specify CONSOLE for the console module; specify NETWORK for the Ethernet device; or specify LC*n* for a line card, where *n* is a number from 1 through 10. (LC9 and LC10 are reserved for standby line cards. If the line card to which your terminal is currently connected fails, your server manager can redirect your terminal to a standby line card. Service sessions will be disconnected, but you can reconnect to them.)

The DECserver 510 hardware has only slots LC1 and LC2. However, the software will show slots LC1 through LC10, where LC3 through LC10 have nothing installed.

ALL — Displays information for all available devices on the server. This is the default display type.

CHARACTERISTICS — Displays a summary of information about the specified device(s). This display is identical to the display for SUMMARY.

COUNTERS — Displays current counter values for the specified device(s).

STATUS	Displays status information. The display is similar to the CHARACTERISTICS display.
SUMMARY	Displays a summary of information about the specified device(s). This display is the default.

Example:

```
Local> SHOW DEVICE LC2 COUNTERS
```

This command displays counters for line card 2.

SHOW NODES— Displays selected information about network service nodes, including reachable nodes (whether or not they are connected) and nodes whose availability is unknown to the server.

Syntax:

SHOW NODES [*node-name*] { COUNTERS / ALL / SUMMARY } [STATUS]

node-name	Displays information for the specified node only.
ALL	Displays information for both reachable and unreachable nodes and for nodes whose availability is unknown. Unreachable nodes you cannot currently connect to or communicate with. If you do not specify ALL or a node name, only reachable and unknown nodes are displayed.
COUNTERS	Displays current counter values for the specified node(s).
STATUS	Displays full information about the specified node(s), including name, address, ID, groups, services, and so on. This is the default display type when you specify a node name.
SUMMARY	Displays a one-line summary of information for the specified node(s), including node name, status, and ID. This is the default display type when you do not specify a node name.

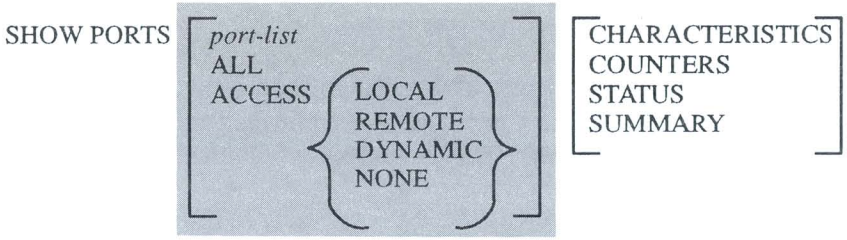
Example:

```
Local> SHOW NODE BOSTON
```

This command produces a status display (by default) for node BOSTON.

SHOW PORTS — Displays selected port information.

Syntax:



port-list	Displays information about the specified port(s) only. You can specify from 1 to 128 (1 to 16 for DECserver 510 hardware) individual ports separated by commas, a range of ports connected by a hyphen, or a combination of both (for example, 2,5-20,40-64,32). If you do not specify a port list, information is displayed for your port.
ALL	Displays information about all ports on the server except port 0.
ACCESS	Displays information about all ports having the type of access you specify.
	LOCAL — Normal local connection access REMOTE — Remote connection access only DYNAMIC — Remote or local connection access NONE — No access
CHARACTERISTICS	Displays definable characteristics for the specified port(s). This is the default display type when you specify a port list or no port.
COUNTERS	Displays current counter values for the specified port(s).

STATUS	Displays full connection and session information for the specified port(s).
SUMMARY	Displays a one-line summary of information for the specified port(s), including port number, accessibility, status, and local services. This is the default display type when you specify ALL or ACCESS.

Example:

```
Local> SHOW PORTS ACCESS LOCAL
```

This command displays one line of summary information (by default) for all ports with local access.

SHOW QUEUE — Displays information about entries in the server queue, including queue position, entry ID, source node, service name, and port name.

Syntax:

SHOW QUEUE [ALL | ENTRY *entry-id* | NODE *node-name* | SERVICE *service-name*]

ALL	Displays information for all queue entries on the server. ALL is the default display type.
ENTRY *entry-id*	Displays information for the specified queue entry only.
NODE *node-name*	Displays information for all queued connection requests from the specified node.
SERVICE *service-name*	Displays information for all queue entries for the specified local service.

Example:

```
Local> SHOW QUEUE ENTRY 114
```

This command displays information about entry number 114 in the server queue.

SHOW SERVER — Displays selected information about the server.

Syntax:

SHOW SERVER [CHARACTERISTICS | COUNTERS | STATUS | SUMMARY]

CHARACTERISTICS	Displays definable characteristics for the server, including a list of groups associated with services offered by the server. This is the default display type.
COUNTERS	Displays current counter values for the server.
STATUS	Displays information about the status of the server.
SUMMARY	Displays summary information for the server, including name, address, identification string, and a summary of all groups currently selected by all ports on the server.

Example:

```
Local> SHOW SERVER STATUS
```

This command displays information about the status of the server.

SHOW SERVICES — Displays selected information about network services currently available to your port (that is, all services for which you have group code access; see Chapter 6).

Syntax:

SHOW SERVICES [*service-name* | LOCAL | ALL] [CHARACTERISTICS | STATUS | SUMMARY]

service-name	Displays information for the specified service only.
LOCAL	Displays information for all services on the local server (available and unavailable).

ALL	Displays information for all available and unavailable services authorized for your port. This is the default selection of services displayed. However, if you do not specify ALL, the server displays only the available services.
CHARACTERISTICS	Displays definable characteristics for the specified local service(s), including name, ID, ports, rating, and more. For remote services, only the name and the ID are displayed.
STATUS	Displays information about the specified service(s), including node names and their status, rating, and ID. The node with the highest service rating is the one most able to accept new sessions for the specified service. STATUS is the default display type when you specify a service name.
SUMMARY	Displays a one-line summary of information for the specified service(s), including name, status, and ID. This is the default display type when you do not specify a service name.

Example:

```
Local> SHOW SERVICE SALES CHARACTERISTICS
```

This command displays the characteristics for service SALES.

SHOW SESSIONS — Identifies the specified port(s) by number and by user name, and displays information about active sessions on the port, including session number, service, and data transparency mode (see Chapter 7). If a request for a service connection is currently queued, the SHOW SESSIONS command displays the position of the request in the queue.

If you do not specify ALL or a port list, the server displays sessions for your port only.

Syntax:

SHOW SESSIONS [PORT *port-list* | ALL]

PORT *port-list*	Displays sessions for the specified port(s). You can specify from 1 to 128 (1 to 16 for DECserver 510 hardware) individual ports separated by commas, a range of ports connected by a hyphen, or a combination of both (for example, 2,5-20,40-64,32).
ALL	Displays sessions for all ports.

Example:

```
Local> SHOW SESSIONS
```

This sample command displays information about the service sessions active on your port. If a session connection request is currently queued, the command displays the position of the request in the service queue.

SHOW USERS — Displays port number, user name, port status, and service name of the current session for all ports logged in to the server.

Syntax:

SHOW USERS

Example:

```
Local> SHOW USERS
```

This sample command displays information about users and their current session at each port on your server.

6

Changing Port and Service Session Characteristics

You can change your port's operating characteristics if you want to affect the port's interaction with the server and the service nodes. You can change your service session's operating characteristics if you want to affect how the server handles certain control characters exchanged during the service session.

6.1 Changing Port Characteristics

Use the SET PORT command to change your port's operating characteristics. The syntax is as follows:

SET [PORT] *characteristic* [*characteristic(s)*]

You can specify multiple characteristics separated by spaces and/or commas, up to a maximum of 84 characters per command line. Changes you make using the SET PORT command remain in effect until you change them again or until you log out of the port.

NOTE

If you want certain changes to remain in effect between logins (for example, PREFERRED SERVICE and AUTOCONNECT), ask your server manager to save the changes for you.

Port characteristics you can specify are described by function on the following pages and are summarized at the end of this book. These sections employ the graphic conventions described in "Using This Guide."

NOTE

In this book, defaults for port characteristics are shown in **BOLD** type; however, your database can contain different settings if you or your server manager have changed these values. Use the SHOW PORT command to display current port characteristics (see Chapter 5).

6.1.1 Setting Switch Characters

You can define switch characters that allow you to move between service sessions without returning to local mode. You can also define switch characters that allow you to move to a service session from local mode. You define a switch by equating it with a keyboard character.

Since a switch character is intercepted by the server and is not passed on to the service node, this character cannot have any other function in either local or service mode. For example, do not define as switch characters any keyboard characters you are likely to use during service mode. It is best to use an undefined control character as a switch character. You specify a control character by simultaneously pressing the CTRL key and a keyboard character. The server displays this key combination as ^*x* (for example, ^~).

To define your own switch characters, specify your chosen characters in the following commands. Specify NONE to cancel a previously set switch character.

NOTE

On terminals under control of session management, you cannot use the FORWARD and BACKWARD switches to move between service sessions. You must use a dedicated key on the terminal for that purpose. See Chapter 9.

FORWARD Switch — Moves you to the service session following your current one in the session list. This switch operates like the FORWARD command (see Chapter 3).

Syntax:

SET [PORT] FORWARD [SWITCH] { *character* / **NONE** }

Example:

```
Local> SET PORT FORWARD CTRL/^
```

This command sets CTRL/^ as your forward switch character. You can now press CTRL/^ to bypass local mode and switch directly to the service session following your current one in the session list.

BACKWARD Switch — Moves you to the service session preceding your current one in the session list. This switch operates like the BACKWARDS command (see Chapter 3).

Syntax:

SET [PORT] BACKWARD [SWITCH] { *character* / **NONE** }

Example:

```
Local> SET PORT BACKWARD CTRL/\
```

This command sets CTRL/\ as your backward switch character. You can now press CTRL/\ to bypass local mode and switch directly to the service session preceding your current one in the session list.

LOCAL Switch — Moves you from a service session to local mode. For example, if you use a modem that interprets the BREAK signal as a command to end a dial-in connection to the server, you must use a local switch character in place of the BREAK key when you return to local mode.

Syntax:

SET [PORT] LOCAL [SWITCH] { *character* | **NONE** }

Example:

```
Local> SET PORT LOCAL CTRL/~
```

This command sets CTRL/~ as the local switch character to use instead of BREAK for normal BREAK key functions.

6.1.2 Setting the BREAK Key

You can specify either that the BREAK signal be sent to your current service session (REMOTE) instead of to the server, or that the signal be ignored in both local mode and service mode (DISABLED). However, if you set the BREAK characteristic to REMOTE or to DISABLED, you should set a local switch character to perform the local BREAK function while BREAK is not functional on the server.

You would want the BREAK signal to be sent to your current service instead of to the server when your terminal is connected to a device that responds to the BREAK signal. If you do not set the BREAK characteristic to REMOTE, a BREAK signal intended for the device would be intercepted by the server instead.

Syntax:

SET [PORT] BREAK { LOCAL | REMOTE | DISABLED }

LOCAL	Sends to the server any BREAK signal that you enter during a service session. The BREAK signal returns you to local mode.
REMOTE	Sends to the service node any BREAK signal that you enter during a service session. Thus, the server does not interpret the BREAK signal to return you to local mode.

DISABLED — Causes the BREAK signal to be ignored in both local mode and service mode.

Example:

```
Local> SET PORT BREAK REMOTE
Local> SET LOCAL SWITCH CTRL/~
```

The first command in this example causes the BREAK signal to be sent to the service node instead of to the server. The second command sets up a local switch you can use to switch to local mode now that the BREAK key cannot be used for that purpose.

6.1.3 Specifying a Preferred Service

You can specify a service as the one to which you automatically connect when you enter a CONNECT command without a service name. To do so, use the SET PORT command as shown in the following example. Identify the preferred service by its service name and include the node and/or port name if desired. (Chapter 4 describes these fields in detail. Note that if you specify a node or port, the server will not use automatic failover.) Specifying NONE for any field cancels the last value entered for that field. For example, if you specify NONE for the service name, you cancel the previously established preferred service.

Syntax:

SET [PORT] PREFERRED { *service-name* / **NONE** } [NODE { *node-name* / **NONE** }] [DEST { *port-name* / *port-number* / **NONE** }]

Example:

```
Local> SET PORT PREFERRED MICRO NODE SERVER2 DESTINATION LC-4-12
```

This sample command sets the preferred service to MICRO on port number LC-4-12 on node SERVER2.

If you enable the autoconnect feature along with a preferred service, the server automatically bypasses local mode at login and tries to connect you to your preferred service. (Your server manager must set this up to become effective at your next login.) Use the following command to enable the autoconnect feature:

SET [PORT] AUTOCONNECT { ENABLED / **DISABLED** }

The server tries to connect you to your preferred service either until it is successful or until you switch to local mode by pressing the BREAK key or by using your local switch character.

Regardless of whether you have a preferred service, autoconnect causes your port to try to reconnect to a service that is disconnected abnormally.

6.1.4 Changing Loss Notification, Display Type, Groups, and User Name

You can specify whether a beep sounds at your terminal when a character you type is lost (LOSS NOTIFICATION), how your terminal displays information and deletes characters in local mode (TYPE), which groups are accessible from your port and displayed by the SHOW NODES or SHOW SERVICES command (GROUPS), and the user name associated with your port (USERNAME).

TYPE — Specifies the display type for your port when it is in local mode. (When a port is in service mode, the service handles the display screen operations.)

Syntax:

SET [PORT] TYPE { ANSI | HARDCOPY | **SOFTCOPY** }

ANSI	Specifies ANSI-standard video display with ANSI escape support (includes Digital personal computers and the VT100 and VT200 series of terminals). TYPE ANSI causes the server to clear the screen before each SHOW display.
HARDCOPY	Specifies format for paper-output terminals, such as LA36 and LA120 terminals. HARDCOPY can be used with any video terminal, but in local mode it displays deleted characters between backslashes (\) rather than erasing them.
SOFTCOPY	Specifies standard video display without ANSI escape support, such as for a VT52 terminal.

Example:

```
Local> SET PORT TYPE HARDCOPY
```

This command sets the local mode display format to HARDCOPY.

GROUPS — Specifies which groups (service nodes and services) authorized for your port are accessible from your port. If your port is in the same group as a service and its service node, then the following conditions apply:

1. When you execute the SHOW NODES or SHOW SERVICES commands, that service and its service node appear in the displays.
2. You can establish a session with that service.

Your server manager authorizes groups for your port (**authorized groups**). You can use the GROUPS characteristic to enable or disable all or some of those authorized groups. The groups currently enabled are called the **current groups.** (Use the SHOW PORT command to display the groups authorized by your server manager and the current groups enabled on your port.) By default, group 0 is enabled and all other groups are disabled on your port.

Group list entries can consist of a single number, individual numbers separated by commas, ranges of numbers connected by hyphens, or a combination. Use the ENABLED or DISABLED keyword to add or remove groups from the authorized list. If you do not specify ENABLED or DISABLED, the group list you specify replaces any existing group list.

Syntax:

SET [PORT] GROUPS { *group-list* / ALL } [ENABLED / DISABLED]

Example:

```
Local> SET PORT GROUPS 8,2,4-6 DISABLED
```

This command removes groups 2, 4, 5, 6, and 8 from the current group list.

LOSS NOTIFICATION — Specifies whether a beep sounds at your terminal when a character is entered and lost because of an error or an overrun.

Syntax:

SET [PORT] LOSS [NOTIFICATION] { **ENABLED** / DISABLED }

USERNAME — Specifies a user name to be associated with the port until you log out of the server or until you change your user name again.

Example:

```
Local> SET PORT USERNAME "Jane Doe"
```

This command associates the name Jane Doe with the port while you are logged in to the server.

The user name can be from 1 to 20 ASCII characters long. You must enclose the user name in quotation marks.

To clear a user name, enter empty quotation marks ("") or specify NONE without quotation marks.

If you are the only user on your port, you can ask your server manager to associate your user name permanently with the port. This causes the server not to prompt for a user name at login.

6.1.5 Changing Your Port's Data Transmission Characteristics

For successful data transmission, the characteristics of your terminal and port that affect character size, parity, speed, and flow control must match the corresponding characteristics of your terminal. If you use the SET PORT command to change the CHARACTER SIZE, PARITY, and SPEED characteristics, you must also change the corresponding settings on your terminal to communicate with the server.

Start by making sure that your terminal settings match the current characteristics for your port (either the values preset by Digital or values you and/or your manager have set). Use the SHOW PORT command to display your port's current characteristics. Once your terminal and port are communicating, you can use the SET PORT commands to change port characteristics. You must then change your terminal characteristics to match the port. Note that when you log out of the server, the port reverts to its original characteristics. You must change your terminal settings again to match the original characteristics.

You cannot use the SET PORT command to change the following characteristics on an IBM 3270 Information Display System terminal connected to the server (by the 3270 Terminal Option product). You can change the speed by using the Set-Up screen while your terminal emulates a VT terminal.

- Character size
- Parity type
- Speed
- Flow control

CHARACTER SIZE — Specifies the number of data bits in the characters exchanged between your port device and the server port.

Syntax:

SET [PORT] CHARACTER [SIZE] { 7 / **8** }

PARITY — Specifies data parity type for your port.

Syntax:

SET [PORT] PARITY { EVEN / ODD / **NONE** }

NOTE

If your server manager has enabled the AUTOBAUD feature on your port, you must specify either CHARACTER SIZE 8 and PARITY NONE or CHARACTER SIZE 7 and PARITY EVEN.

SPEED — Specifies port speed in bits per second. Possible values are 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 7200, 9600 (default), 19200, and 38400. If your server manager has enabled the AUTOBAUD feature, your port automatically matches its speed to that of your terminal.

Syntax:

SET [PORT] [INPUT / OUTPUT] SPEED *speed*

Example:

```
Local> SET PORT SPEED 19200
```

This command changes the port's speed in both directions to 19200 bits per second.

You can change the speed in one direction by specifying either INPUT (the speed from your terminal to the server) or OUTPUT (the speed from the server to your terminal). However, the AUTOBAUD feature (if enabled) still assumes the same speed for input and output.

FLOW CONTROL — If enabled, specifies the type of flow control used by the server to control data transfer between your port and your terminal. To enable flow control, specify either CTS, DSR, or XON, as explained here. See your server manager for more details on flow control.

Syntax:

SET [PORT] FLOW [CONTROL] { CTS / DSR / **XON** / DISABLED }

CTS	Specifies Request-to-Send/Clear-to-Send (RTS/CTS) modem-signal flow control. Valid for modem-controlled ports only. The MODEM characteristic must be set to DISABLED.
DSR	Specifies Data Terminal Ready/Data Set Ready (DTR/DSR) modem-signal flow control.

XON	Specifies transmit-on/transmit-off (XON/XOFF) flow control. The server and the terminal use XON and XOFF characters to control the flow of data. This type of flow control is the default.
DISABLED	Specifies no flow control between the server port and your terminal.

6.1.6 Specifying Message Reception

You can control the reception of some messages that your port receives from the server and its users.

AUTOPROMPT — Specifies whether a service node's log-in prompt appears when you start a session with a service.

Syntax:

SET [PORT] AUTOPROMPT { **ENABLED** / DISABLED }

BROADCAST — Specifies whether your port receives local BROADCAST messages from other ports or from the server (for example, service announcements or INITIALIZE messages).

Syntax:

SET [PORT] BROADCAST { ENABLED / **DISABLED** }

MESSAGE CODES — Specifies whether a 3-digit message code appears with server information messages and error messages.

Syntax:

SET [PORT] MESSAGE [CODES] { **ENABLED** / DISABLED }

VERIFICATION — Specifies whether server information messages display at your terminal when you connect, disconnect, or switch sessions.

Syntax:

SET [PORT] VERIFICATION { **ENABLED** / DISABLED }

6.1.7 Specifying Support for Queuing

You can enable or disable the queuing of your connection requests when the requested services are busy. The queue ensures that the service node honors your request on a first-come, first-served basis. While a connection request is queued, you cannot switch to other sessions without cancelling your queued connection request. To switch to another session, press the BREAK key. If session management is in effect on your terminal, you can switch to other sessions without cancelling your queued connection request.

If you disable queuing, a connection request to a busy service is rejected, and you are free to switch or connect to another session.

Syntax:

SET [PORT] QUEUING { ENABLED / **DISABLED** }

6.1.8 Specifying Session Management (Multisessions with TD/SMP)

To set up your terminal's port to support session management, you must enable the MULTISESSIONS characteristic. (Your terminal must support session management.) When you enable the MULTISESSIONS characteristic, you can then use session management at your terminal. When you disable the characteristic, you end all terminal sessions and their associated service sessions. See Chapter 9 for more details.

Syntax:

SET [PORT] MULTISESSIONS { ENABLED / **DISABLED** }

The SHOW PORT and SHOW SESSIONS commands display information about the MULTISESSIONS characteristic.

6.2 Changing Your Session's Characteristics

During a service session, the server normally intercepts your switch characters and flow control characters. You can use the SET SESSION command with either the PASSALL or PASTHRU parameter to enable **data transparency**, causing such characters to become "invisible" to the server. The server does not intercept the characters while they are being exchanged in your current session, such as during a file transfer (see Chapter 7) or during a block-mode transfer (where your terminal sends a screen of data to the host application).

Because the SET SESSION command affects your current session only, be sure that the session you want to affect is in fact the current session; that is, it should be the last session you worked with before switching to local mode to enter the SET SESSION command. The setting remains in effect until you change it again or until you disconnect the session.

Syntax:

SET SESSION { **INTERACTIVE** / PASSALL / PASTHRU }

INTERACTIVE — Causes the server to recognize all switch and flow-control characters. Use INTERACTIVE as your normal session mode.

PASSALL — Causes the server to ignore all switch and flow-control characters and to exchange them as data. Use PASSALL for all binary file transfers.

PASTHRU — Causes the server to intercept flow-control characters but to ignore the switch characters and exchange them as data. Use PASTHRU for ASCII file transfers.

Example:

```
Local> SET SESSION PASTHRU
```

This command causes your server to ignore switch control characters used or exchanged during your current service session. The server still intercepts flow-control characters.

NOTE

PASSALL and PASTHRU prevent the server from sending server messages or user broadcasts to the port while your service session is active. Server messages could interfere with the exchange of data.

7

File Transfers

If you are using a personal computer (PC) connected to the server, and the PC is in terminal emulation mode, you can transfer files between your PC and another PC or host system on the network. (The other PC or host system is called the "partner" computer system.) Use the file transfer program available on the system from which you initiate the transfer.

NOTE

IBM 3270 Information Display System terminals using Digital's 3270 Terminal Option software on the server do not support file transfers.

The procedure for transferring files varies with the partner computer system, either:

- A non-LAT host (including PCs) or a service node not supporting LAT V5.1, or
- A service node supporting LAT V5.1.

Local Area Transport (LAT) is the protocol that servers and service nodes use to communicate with each other. The following sections discuss the procedures. Before you transfer a file, you must ensure that your PC, its server port, and the partner are set up to support a file transfer.

Check Access to the Partner

If any of the following conditions are not met, ask your server manager for help:

- The partner must be a service available from your port. This means that the partner must be offered as a service and that your port has group-code access to it. The SHOW SERVICES command displays the services your port can access.
- The ACCESS characteristic for the server port of your PC must be set to either DYNAMIC or REMOTE. Use the SHOW PORT command to display the port's access characteristic.
- If your PC has DYNAMIC access, you must log out of the server and have your server manager disable the AUTOBAUD feature on the port. Use the SHOW PORT command to see whether AUTOBAUD is enabled.

Check Your Port Speed, Parity, and Character Size

Your port's transmission speed, parity, and character size must match those of the PC connected to it. File transfer programs for some PCs can use defaults for parity and or character size that differ from the values used when the PC is in terminal emulation mode. In such cases, you must either change the default values to match those of your port or set your port characteristics to match the defaults (see Chapter 6).

7.1 Partner Is a Non-LAT Host or Service Node Not Supporting LAT V5.1

This section outlines the procedures for transferring files between your PC and a non-LAT host or service node that does not support LAT V5.1.

1. Enter the SET PORT BREAK LOCAL command to set the BREAK key as the local switch. When you press the BREAK key, the server processes it and returns you to local mode.
2. Connect to the service offering access to the partner computer for the file transfer.
3. Press the BREAK key to return to local mode.

4. Enter the SET SESSION PASTHRU command to transfer ASCII files. Enter the SET SESSION PASSALL command to transfer binary files. Both commands prevent your server from sending server messages or user broadcasts to the port while the service session is active. Such messages could interfere with the transfer.

NOTE

Remember that the SET SESSION command affects your current service session only. Before switching to local mode to enter the SET SESSION command, be sure your current service session is the one you intend to involve in the file transfer. The SET SESSION setting remains in effect until you change it again or until you disconnect the service session.

5. Resume the current service session:

```
Local> RESUME
```

6. If necessary, disable flow control on the partner computer (see the documentation of the partner computer system).

7. Run the file transfer program on the system where you initiate the file transfer.

8. After the transfer(s), press the BREAK key to return to local mode.

9. Enter the SET SESSION INTERACTIVE command to disable data transparency so that the server resumes intercepting switch and flow control characters and sending server messages and user broadcasts to your port.

7.2 Partner Is a Service Node Supporting LAT V5.1

The following section outlines the procedure for transferring files between your PC and a service node that supports LAT V5.1.

1. Enter the SET PORT BREAK LOCAL command to set the BREAK key as the local switch. When you press the BREAK key, the server processes it and returns you to local mode.

2. Connect to the service offering access to the partner computer for the file transfer.

3. During a service session, the server usually intercepts your switch (see Chapter 6) and flow-control characters. Most file transfer programs automatically enable data transparency for the service session to prevent the server from intercepting these characters and from sending server messages or user broadcasts to your port during the file transfer. If the program you use does not automatically enable data transparency, you must do so manually. To see whether the file program automatically enables data transparency, do the following:

   a. While connected to the service offering access to the partner system, invoke the file transfer program.

   b. Press the BREAK key to enter local mode.

   c. Enter the SHOW SESSION command to see whether your current session is set to either PASSALL or PASTHRU. If it is not (the mode will be INTERACTIVE), you must enable data transparency for your session as follows:

      Enter the SET SESSION PASSALL or SET SESSION PASTHRU command. If the partner is a host service node, you can enable transparency by issuing the following command to the host system. In this way, you do not have to switch to local mode.

      ```
      $ SET TERMINAL/PASSALL
      ```

4. Make sure that data transparency is in effect on the partner. For VMS service nodes using the LATplus/VMS or LAT/VMS service software, use the following command:

   ```
   $ SET TERMINAL/PASSALL
   ```

5. Run the file transfer program, as explained in the documentation for your system where you initiate the transfer.

6. After the transfer(s), press the BREAK key to return to local mode.

7. If you had to enable data transparency by using the SET SESSION PASSALL or SET SESSION PASTHRU command, disable transparency by entering the SET SESSION INTERACTIVE command. Your server resumes intercepting switch and flow control characters and sending server messages and user broadcasts to your port.

8. Disable transparency on the partner. For VMS service nodes using the LAT-plus/VMS or LAT/VMS service software, use the following command:

```
$ SET TERMINAL/INTERACTIVE
```

Disable Interrupts

Ask your server manager to disable interrupts on the server port of a target PC to prevent interruptions if someone presses the BREAK key on the target PC's keyboard.

8

Additional Features

This chapter explains how to do the following:

1. Lock your terminal to prevent use by others when you are temporarily away from it.
2. Test your port and detect problems.
3. Broadcast a message to another port on the server.

8.1 Locking Your Terminal

If you must leave your terminal temporarily unattended, you can use the LOCK command to prevent its use by other users.

```
Local> LOCK
```

If the LOCK feature is not enabled on your server or your port, the server displays an error message. (Your server manager can enable or disable the LOCK feature.)

If LOCK is enabled on your server and port, the server prompts you for a lock password. After you enter your choice of a 1- to 16-character alphanumeric password (which does not display on your terminal), the server prompts you to enter it again for verification.

```
Lock Password> password (not displayed)
Verification> password (not displayed)
```

If your password entries do not match, the server issues an error message and returns to the local prompt. If your entries match, the server displays a status message and a prompt (Unlock Password>). Your terminal remains locked until you enter the same password again, returning you to local mode.

```
Unlock Password> password (not displayed)
Local>
```

If you forget your unlock password, ask your server manager to log out your port.

8.2 Testing Your Port

You can test your port by using the TEST PORT command to request the server to send a stream of characters to your terminal. Look for irregularities in the repeating ASCII pattern to detect problems with your terminal or its connection to the server. Press any key to stop the display.

TEST [PORT] [COUNT *n*] [WIDTH *n*]

COUNT *n*	Specifies the number of test lines to be sent (default: 23).
WIDTH *n*	Specifies the number of characters per line (range: 1 through 80; default: 80).

8.3 Broadcasting a Message

If the server manager permits broadcasting and your port is not a secure port, you can use the BROADCAST command to send messages to another port on the server. Use the SHOW USERS command to display names and port numbers of server users.

BROADCAST PORT *port-number "message-text"*

port-number	Specifies the number of the port to receive the message.
message-text	Specifies the text of the message (up to 72 characters provided you do not exceed the total command line limit of 84 characters).

For example, the following command broadcasts a message to port 6:

```
Local> BROADCAST PORT 6 "How about lunch today?"
```

You can set your port not to receive BROADCAST messages (see Chapter 6).

9

Using Terminals That Support Session Management (TD/SMP)

The server software supports terminals that provide session management capabilities using TD/SMP (Terminal Device/Session Management Protocol). For a list of terminals that support session management, see the DECserver 500 *Software Product Description* (SPD). Some server commands take on different meanings when used with session management (see Section 9.12).

9.1 Main Features of Session Management

The session management facility is software shared by the server and your terminal to control communications between them. When you establish multiple service sessions, the software establishes a separate communications link for each session. Thus, communications can occur over all the links simultaneously. The data exchange of noncurrent sessions can continue rather than be suspended (as is the case without session management).

Some terminals that support session management can also display the output of several service sessions simultaneously on a divided display screen. While you interact with one of the service sessions (the current session), your terminal continues to display the output of the other sessions.

A session management terminal also maintains application-defined keys, keypads, and device attributes set for each service session. Examples of device attributes are the type of screen scrolling (jump or smooth) and the width of the screen (80 or 132 columns). The terminal "remembers" the definitions and attributes associated with each active session. When you switch from one session to another, your terminal automatically restores the proper context of the current service session. For example, your terminal can display the output of one service session with smooth scrolling and the output of another session with jump scrolling. Also, in one session you can have the CAP LOCK key set for uppercase, while in another you can have the key set for lowercase. As you switch between these two sessions, your terminal applies the proper setting for the key. The terminal also recovers keypad and session context after a server failure or when you turn on your terminal.

In summary, session management has the following features:

- Keeps terminal context independently for each session
- Offers multiple local modes to manage service sessions and port characteristics independently
- Allows simultaneous data exchange with multiple service sessions

Depending on the capabilities of your terminal, you may also be able to do the following:

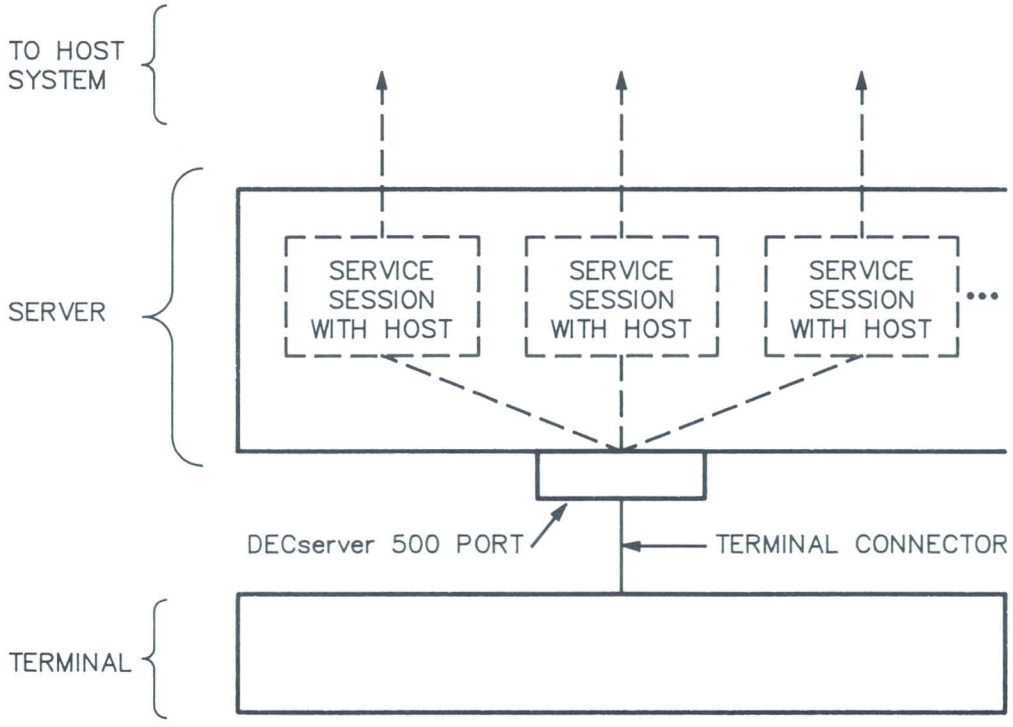
- Divide your screen to display and manage multiple service sessions simultaneously
- Choose the format of your terminal's divided screen display
- Pan (or scroll) a service session display
- Change the relative size of the displays on the divided screen
- Suspend the output of noncurrent sessions

To see what capabilities your terminal supports, see the documentation supplied with it. Your terminal's operating features (set-up) must be set to support session management.

9.2 How Session Management Works

Session management establishes separate communication links between each service session and your terminal. Without session management, multiple service sessions must share the same communications link as shown in Figure 9–1. Therefore, only one service session at a time can exchange data with the terminal. Also, the terminal cannot maintain independent definitions for keys and device attributes for each session.

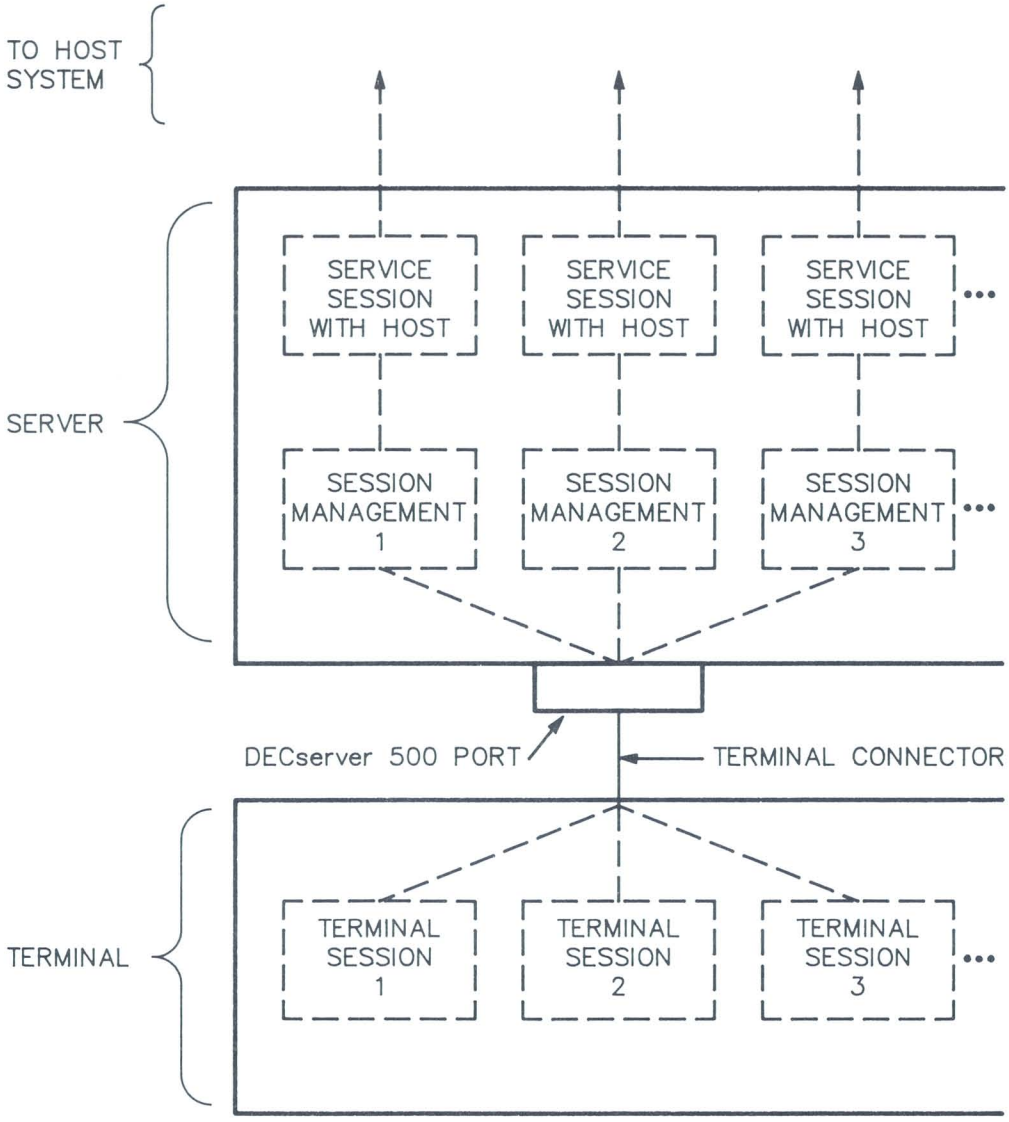
Figure 9–1: Multiple Sessions Without Session Management



With session management, the server manages the link between a terminal session and a service session (if one is established) (Figure 9–2). With multiple service sessions, the server manages each link independently. It transmits all data exchanged between the services and your terminal simultaneously over a single physical line. Specifically, the session management software funnels all data streams being sent by the services into a single stream from the server to your terminal. Your terminal then splits this stream into the original streams, forwarding them to their intended terminal sessions.

Because communications occur simultaneously, each service session appears to be communicating over a separate physical link to your terminal. The exchange of data between each service and your terminal continues without interruption, regardless of which session is current.

Figure 9–2: Multiple Sessions with Session Management



9.3 Starting Session Management at Your Terminal

Before you can begin session management, you must enable MULTISESSIONS for your terminal's port. Enter the following command:

```
Local> SET PORT MULTISESSIONS ENABLED
```

NOTE

If your terminal does not support session management or is not set up to support session management displays, you will see unexpected characters followed by an error message indicating that session management could not be started. See the DECserver 500 *Software Product Description* for a list of terminals that support session management. IBM 3270 Information Display System terminals using Digital's 3270 Terminal Option software on the server do not support session management; therefore, the DECserver 510 server does not support session management.

9.4 Establishing a Service Session in Session Management

When session management is enabled for your terminal's port, you can open a **terminal session** at your terminal, as explained in the documentation supplied with your terminal. A terminal session has a local mode from which you can establish a service session by using the CONNECT command.

If a preferred service is set for your port and the AUTOCONNECT feature is enabled, the server establishes that service automatically when you open the terminal session. You can access local mode by pressing the BREAK key.

NOTE

In documentation supplied with a terminal that supports session management, "session" corresponds to "terminal session" here.

9.4.1 Establishing Service Sessions on Terminals That Bypass Local Mode

On some terminals, when you open a terminal session you can establish a service session directly without entering local mode. The terminal prompts you for a service name as part of the procedure for opening a terminal session. Enter the name of the service to which you want to connect. You can specify the service node and/or port where the service is offered, using the same syntax as with the server CONNECT command. For example, if you want to connect to the service PRINTER on port PORT_1 of node SERVER1, enter this command:

```
Local> PRINTER NODE SERVER1 DESTINATION PORT 1
```

9.4.2 Accessing Local Mode on Terminals That Bypass Local Mode

On terminals that bypass local mode when you open a terminal session, you can get to local mode by pressing the RETURN key instead of entering a service name at the terminal's prompt. The local prompt then appears. Exception: You do not get the local prompt if you have a preferred service with AUTOCONNECT enabled. In this case, when you press the RETURN key at the terminal prompt, the server automatically connects you to your preferred service. To access local mode, enter LOCAL as the service name at the terminal prompt. The server responds by placing your terminal in local mode. The server responds to the service name LOCAL only during terminal sessions in session management.

9.5 Establishing Multiple Service Sessions

To establish an additional service session, open another terminal session. You can establish a service session for each terminal session that you open. The number of terminal sessions you can open depends on your terminal and on the session limit that your server manager has defined for your terminal's port.

If a preferred service is set for your port and the AUTOCONNECT feature is enabled, the server establishes that service automatically each time you open a terminal session.

9.6 Displaying Service Sessions

Use the SHOW SESSIONS command to display all service sessions active on all terminal sessions at your port.

9.7 Queued Connection Requests

If the service you request is busy and your connection request is queued, you can switch to another session (see Section 9.8) without cancelling the queued request. This feature works only while your terminal is in session management. If your terminal is not in session management, the queued request is cancelled when you switch to another session or to local mode.

9.8 Switching Between Sessions

To switch between service sessions in session management, you must use the action appropriate for your terminal (usually a dedicated switch-session key). You cannot use local mode BACKWARD and FORWARD commands. (Each terminal session "knows" only one service session.) Similarly, you cannot use the FORWARD and BACKWARD switch characters while in service mode. Section 9.12 summarizes the meanings of local mode server commands during session management.

9.9 Resuming Your Current Session from Local Mode

To resume your current session from local mode, use the RESUME command. You cannot use the RESUME SESSION *session-number* command in session management.

9.10 Disconnecting Sessions

This section explains how to disconnect terminal and service sessions during session management.

9.10.1 Disconnecting Your Current Service Session

To disconnect your current service session, enter the DISCONNECT command in local mode.

9.10.2 Disconnecting a Noncurrent Service Session

Enter local mode and use the DISCONNECT SESSION *session-number* command, specifying the number of the service session you want to disconnect. The command disconnects the specified service session but does not disconnect the terminal session. When you switch to the terminal session of the disconnected service session, the local mode prompt appears. A service session is not currently established for that terminal session.

9.10.3 Disconnecting Your Current Terminal Session and the Associated Service Session

You can disconnect both the terminal session and an associated service session in either of the following ways:

1. Log out of the connected host service.
2. Press the BREAK key to enter local mode; then enter the LOGOUT command.

In either case, you cannot enter commands. However, any other terminal sessions continue to be active. You can switch to another terminal session or open a new one.

9.10.4 Disconnecting All Service Sessions on Your Port

In local mode, enter the DISCONNECT ALL command. This disconnects all service sessions but does not disconnect the terminal sessions. Your terminal enters local mode for each terminal session.

9.10.5 Disconnecting All Terminal and Service Sessions on Your Port

You can disconnect all terminal and service sessions on your port by typing the SET MULTISESSIONS DISABLED command in local mode. This disables session management but leaves you logged into the server (in local mode).

9.11 Disabling Session Management

To disable session management, use the SET PORT MULTISESSIONS DISABLED command. This command disconnects all active service sessions.

9.12 Using Local Mode Server Commands During Session Management

You can access local mode from any terminal session. To do so, press the BREAK key or your local switch character.

In session management, you can use many server commands as you usually do. However, certain server commands take on a different meaning. Table 9–1 lists the local mode server commands that have a different meaning during session management as well as the restrictions that apply to each.

9.13 Failure Recovery

If your terminal session ends abnormally, such as during a power failure, your session is recovered automatically the next time you begin a terminal session. Any other active sessions at the time of the failure are also recovered. The server attempts to reestablish all service sessions that were in progress before the failure.

Table 9–1: Meanings of Local Mode Commands During Session Management

Command	Description
CONNECT	Establishes a service session for any terminal session. Cannot be used to establish an additional session. To do so, you must open another terminal session.
DISCONNECT	DISCONNECT disconnects the current service session and returns you to local mode for the terminal session.
DISCONNECT ALL	DISCONNECT ALL disconnects all service sessions on your port. All terminal sessions return to local mode. Neither command disconnects terminal sessions. DISCONNECT SESSION *session-number* disconnects a service session of another terminal session. When you switch to the affected terminal session, your terminal will be in local mode with no service session. See Section 9.10 for more details on the DISCONNECT command.
DISCONNECT SESSION *session-number*	
LOGOUT	LOGOUT closes your current terminal session only and disconnects any service session associated with it. You are not logged out of the server. You can open or switch to another terminal session.
RESUME	Returns you to your current service session from local mode. You cannot use the RESUME SESSION *session-number* command to resume a specific session.
SET PORT	Changes the current characteristics for a server port. Changes apply to all terminal sessions for that port. The PREFERRED characteristic behaves differently for terminal sessions. The preferred service is supported while you are in a terminal session if you use a CONNECT command without specifying a service. The preferred service also takes effect when you establish a terminal session if you do not specify a service name when the terminal prompts you for one. If you do not want to connect to the preferred service from your terminal session, enter LOCAL when your terminal prompts you for a service name.

10

Command Summary

Section 10.1 lists nonprivileged user commands. Section 10.2 lists port characteristics you can define with the SET PORT command.

10.1 Nonprivileged User Commands

BACKWARD

BROADCAST PORT *port-number message-text*

CONNECT [*service-name* [NODE *node-name*] [DESTINATION *port-name*]]

DISCONNECT [SESSION *session-number* | ALL]

FORWARD

HELP [TUTORIAL | *topic* [*subtopic* [*subtopic*]]]

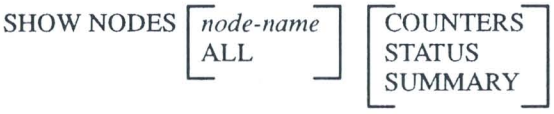
LOCK

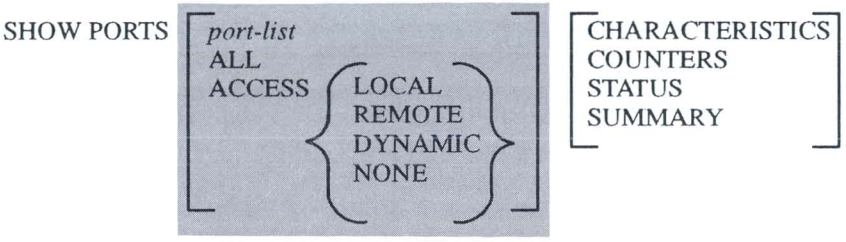
LOGOUT

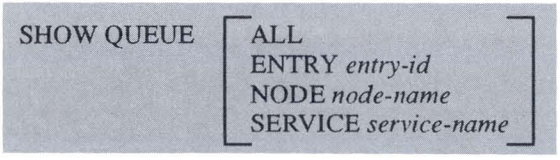
RESUME [SESSION *session-number*]

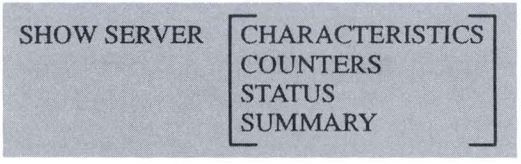
SET [PORT] *characteristic* [*characteristic(s)*]

(Port characteristics are summarized in Section 10.2.)









SHOW SERVICES [*service-name* | LOCAL | ALL] [CHARACTERISTICS | STATUS | SUMMARY]

SHOW SESSIONS [PORT *port-list* | ALL]

SHOW USERS

TEST [PORT] [COUNT *n*] [WIDTH *n*]

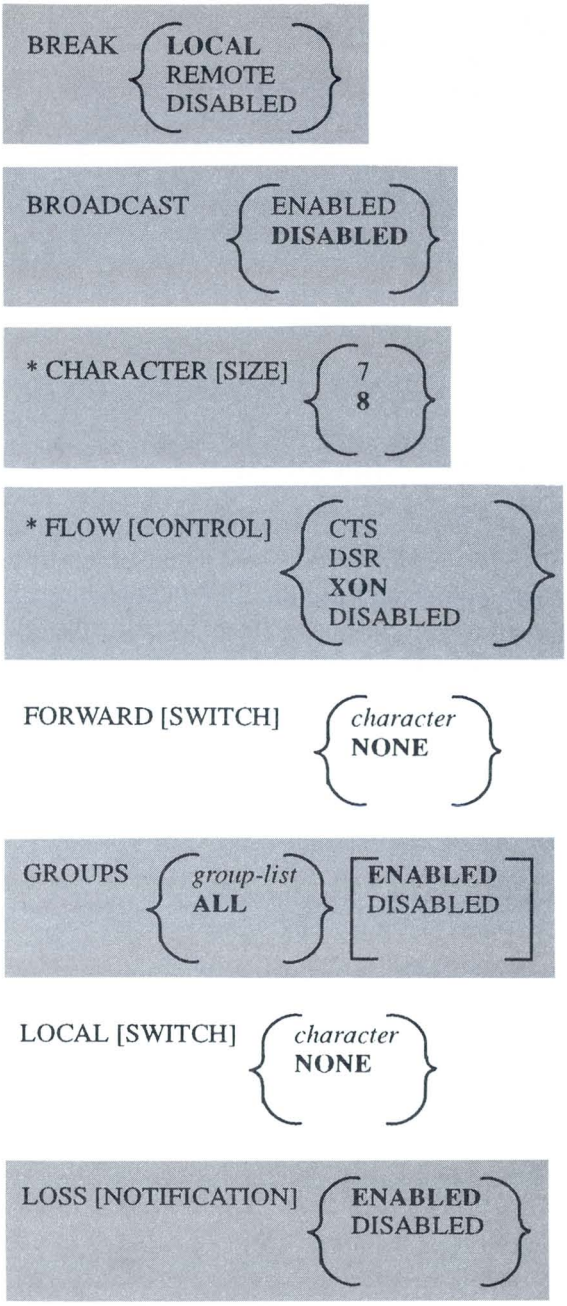
10.2 Summary of User–Definable Port Characteristics

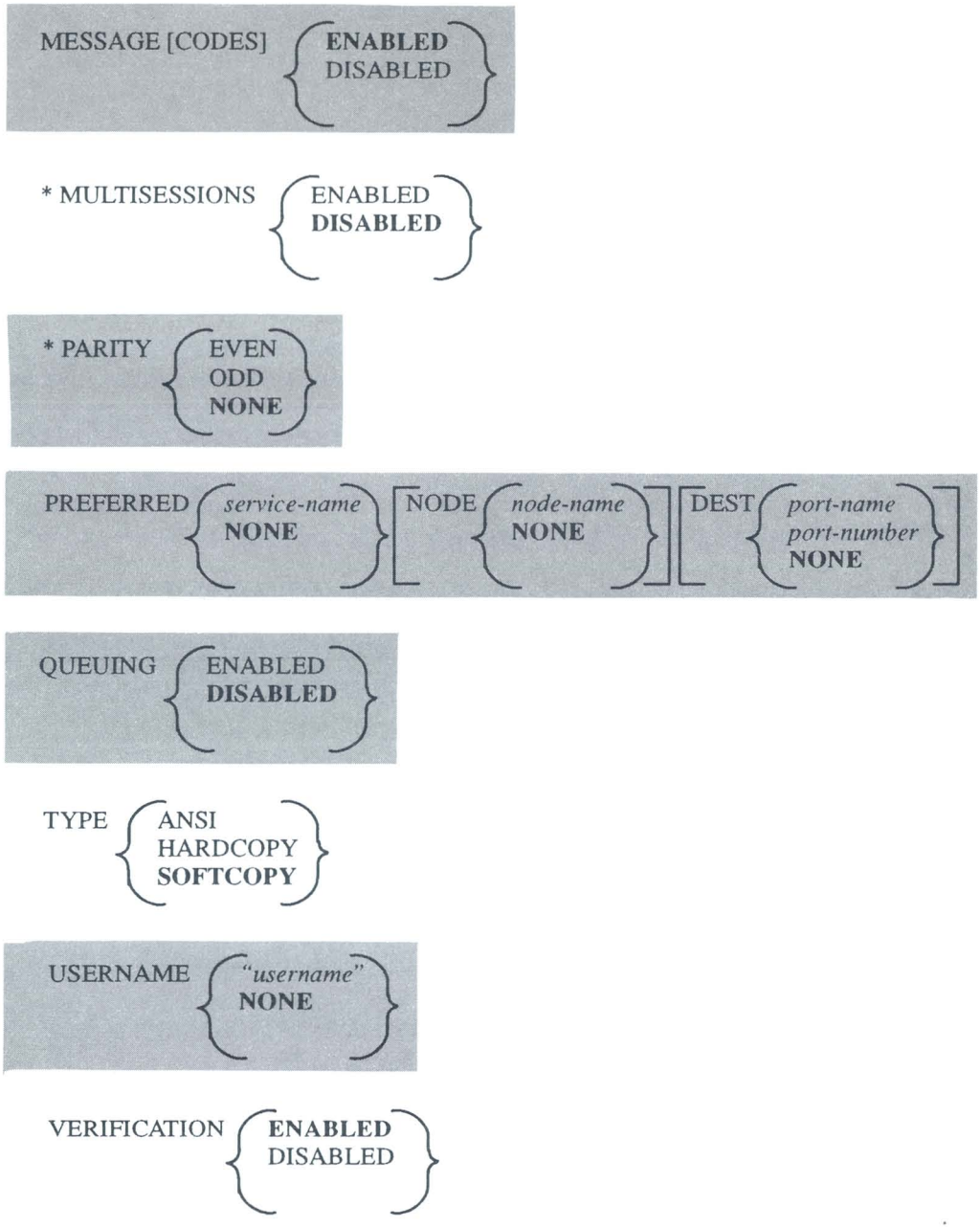
The following summary lists the SET PORT characteristic options alphabetically. For details, see Chapter 6. On IBM 3270 terminals connected to the server (by using the 3270 Terminal Option product), you cannot use the SET PORT command to change certain characteristics; however, you can change them by using the Set–Up screen when the terminal emulates a VT terminal. These characteristics are preceded by an asterisk (*). The 3270 Terminal Option ports do not support the MULTISESSIONS characteristic.

AUTOCONNECT { ENABLED | **DISABLED** }

AUTOPROMPT { **ENABLED** | DISABLED }

BACKWARD [SWITCH] { *character* | **NONE** }


BREAK
LOCAL
REMOTE
DISABLED
BROADCAST
ENABLED
DISABLED
* CHARACTER [SIZE]
7
8
* FLOW [CONTROL]
CTS
DSR
XON
DISABLED
FORWARD [SWITCH]
character
NONE
GROUPS
group-list
ALL
ENABLED
DISABLED
LOCAL [SWITCH]
character
NONE
LOSS [NOTIFICATION]
ENABLED
DISABLED


MESSAGE [CODES] ENABLED DISABLED
* MULTISESSIONS ENABLED DISABLED
* PARITY EVEN ODD NONE
PREFERRED service-name NONE NODE node-name NONE DEST port-name port-number NONE
QUEUING ENABLED DISABLED
TYPE ANSI HARDCOPY SOFTCOPY
USERNAME "username" NONE
VERIFICATION ENABLED DISABLED

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How to Order Documents

All the information you need to order additional documents is provided here. The ordering procedure you use depends on:

- Whether you are a customer or a Digital employee
- Your location: USA or Puerto Rico, Canada, or other
- Your means of placing the order: telephone, electronic mail, or regular mail

The specific ordering procedures and the order numbers for software and hardware documentation are provided in the following sections. Three operating–system–specific software documentation kits are available.

Order Numbers

For software manuals, use the documentation kit order number. Documentation kit order numbers end in the letters GZ. If a software manual is not part of a documentation kit, use the number that appears after the title of the publication. For hardware manuals, always use the document order number that appears after the title of the publication.

There are software kits for three operating systems: VMS, RSX–11M–PLUS, and Micro/RSX.

VMS Software Documentation Kit

The VMS documentation kit order number is QA–03KAA–GZ. The kit contains one each of the following manuals:

- *DECserver 500 Introduction*
- *DECserver 500 Software Installation (VMS)*
- *DECserver 500 Use*
- *Terminal Server User's Reference Card*
- *DECserver 500 Management*
- *Terminal Server Commands and Messages*
- *DECserver 500 Commands Quick Reference*
- *Local Area Transport (LAT) Network Concepts*
- *DECserver 500 Problem Solving*
- *Terminal Server Glossary*

RSX–11M–PLUS Software Documentation Kit

The RSX–11M–PLUS documentation kit order number is 00–QRZ46–GZ. This kit contains the same manuals as the VMS documentation kit except that the RSX–11M–PLUS kit contains the *DECserver 500 Software Installation (RSX–11M–PLUS)* manual instead of the VMS version.

Micro/RSX Software Documentation Kit

The RSX–11M–PLUS documentation kit order number is 00–QYZ46–GZ. This kit contains the same manuals as the VMS documentation kit except that the Micro/RSX kit contains the *DECserver 500 Software Installation (Micro/RSX)* manual instead of the VMS version.

DECserver 500 User's Documentation Kit

The user documentation kit order number is QA–03KAB–GZ. This kit is intended for terminal users and contains only two manuals: the *DECserver 500 Use* manual and *Terminal Server User's Reference Card.*

3270 Terminal Option Software Documentation Kit

The 3270 Terminal Option documentation kit order number is QA–VV9AA–GZ. The kit contains one each of the following manuals plus a set of keyboard reference cards:

- *3270 Terminal Option Software Installation*
- *3270 Terminal Option Use*
- *Terminal Server User's Reference Card*

3270 Terminal Option Software Documentation Kit

The 3270 Terminal Option user's kit order number is QA–VV9AB–GZ. The kit contains one each of the following manuals plus a set of keyboard reference cards:

- *3270 Terminal Option Use*
- *Terminal Server User's Reference Card*

Hardware Documents

The order number for the hardware manuals are listed in Table 1.

Table 1: Order Numbers for Hardware Manuals

Manual Title	Order Number
DECserver 500 Hardware manuals:	
DECserver 500 Hardware Installation Guide	EK–DECS5–IN
DECserver 500 Identification Card	EK–DECS5–IC
DECserver 500 Troubleshooting Quick Reference Card	EK–DECS5–RC
DECserver 500 Technical Manual	EK–DECS5–TM
Site Preparation Instructions DECserver 550 System	EK–DECS5–SP
DECserver 510 Hardware manuals:	
DECserver 510 Hardware Installation	EK–DS510–IN
DECserver 510 Identification Card	EK–DS510–ID
DECserver 510 Hardware Problem Solving	EK–DS510–PS
DECserver 550 Hardware manuals:	
DECserver 550 Hardware Installation	EK–DS550–IN
DECserver 550 Identification Card	EK–DS550–IC
DECserver 550 Troubleshooting Quick Reference Card	EK–DS550–RC
DECserver 550 Technical Description	EK–DS550–TD
DECserver 550 Information and Site Preparation	EK–DS550–SP

Ordering Procedures for Customers

If you are a customer, refer to Tables 2 and 3 for ordering information.

Table 2: How to Order by Telephone

If You Live in	Phone
United States	(800) DIGITAL
Puerto Rico	(800) 754–7575 Extension 2012
Canada	(800) 267–6215

Table 3: How to Order by Mail

If You Live in	Write to
USA or Puerto Rico*	Digital Equipment Corporation P.O. Box CS2008 Nashua, New Hampshire 03061
Canada	Digital Equipment of Canada LTD. 940 Belfast Road Ottawa, Ontario, Canada K1G 4C2 Attn: A&SG Business Manager
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