DECserver 300

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Use

Order No. AA–NE43A–TE

DECserver 300

Use

June 1989

This manual describes DECserver 300 commands and the general functions of the server. It provides complete information for using all nonprivileged server commands. This manual is intended for users of interactive terminals connected to DECserver 300 ports.

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This manual applies to Version 1.0 of DECserver 300 and all subsequent maintenance releases up to the next major product release.

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Preface

The *DECserver 300 Use* manual is a tutorial introduction to basic server usage, including descriptions of all server commands and port characteristics that can be set by users at nonprivileged ports.

Intended Audience

This guide is intended for any user at an interactive terminal that is connected to a DECserver 300 port.

Structure of This Manual

The chapters of this guide and their contents are summarized below:

- Chapter 1 Introduction — Describes how to use the server in a network environment, defines terms used in this guide, provides guidelines for entering server commands, and describes server messages.
- Chapter 2 Getting Started — Describes how to log in to and log out of the server, how to begin and end sessions with a service, and how to display on-line HELP.
- Chapter 3 Multiple Sessions — Explains how to create several sessions on one port and how to switch among them.
- Chapter 4 Connecting to Specific Nodes and Ports — Explains how to use the CONNECT command to establish sessions with services on specific nodes and ports.

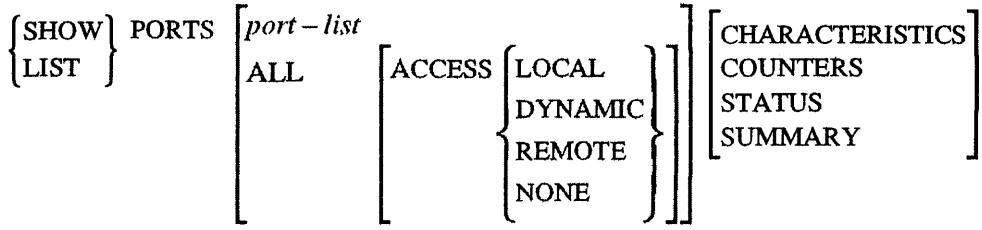
- Chapter 5 Displaying Information — Explains how to use SHOW and LIST commands to display information about the server, ports, service nodes, network services, sessions, users, and queue entries.
- Chapter 6 Changing Port and Session Characteristics — Explains how to use SET and DEFINE commands to change port and session characteristics.
- Chapter 7 File Transfers — Explains how to transfer files between your personal computer (PC) and a service.
- Chapter 8 Additional Features — 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 Using Terminals Supporting Session Management (TD/SMP) — Describes the available features and restrictions when using a terminal supporting session management.
- Chapter 10 Command Summary — Alphabetically lists all DECserver 300 nonprivileged user commands and user-definable port characteristics. Includes page references to command descriptions within this guide.

Graphic Conventions Used in This Guide

Convention	Meaning
`Special type`	This special type in examples 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 must be entered. You can enter them in either uppercase or lowercase. You can abbreviate command keywords to the first three characters or the minimum unique abbreviation.
lowercase italics	Lowercase italics in command syntax or examples indicate variables for which either the user or the system supplies a value.

Convention	Meaning
[ ]	Square brackets in command lines indicate that the enclosed values are optional. (Do not type the brackets.)
{ }	Braces in command lines indicate that you must specify one (and only one) of the enclosed values. (Do not type the braces.)
BOLD	In port characteristic syntax, boldface type indicates Digital Equipment Corporation factory-set defaults. Bold text identifies an important term that is defined in the text. The term is also listed in the *Terminal Server Glossary.*
/	This indicates related alternative commands or options. For example, SET/DEFINE PORT refers to the SET PORT and/or DEFINE PORT command(s).
Shaded text	Shaded text indicates commands and options that cannot be used on secure ports (see Chapter 1).
key	Press the specified key. For example, RET indicates that you press the RETURN key.
CTRL/*x*	Hold down the CONTROL key and then press the key specified by *x*. Pressing the CONTROL key displays the ^ character.

Sample syntax statement:



For this command, you must specify either SHOW or LIST and the keyword PORTS. The shading indicates that users of nonsecure ports can further qualify PORTS with a port number or with the keyword ALL or ACCESS. If you specify ACCESS, you must also include either LOCAL, DYNAMIC, REMOTE, or NONE. All users can specify one or none of the four display formats shown in the last column. Defaults are applied for options you do not specify. Read the command descriptions for any restrictions; for example, in this command, you cannot specify COUNTERS or STATUS with LIST PORTS.

1

Introduction

The DECserver 300 product (referred to as the server) is a component on a local area network (LAN); the server connects devices such as terminals and printers to the network. Each device is attached to the server at a connection called a **port**; each server has sixteen ports. The server manager can define characteristics for each port to control the operation of the device attached to the port. The server manager can set up a port to:

- Allow terminal access to resources, called services, that are offered on the network.
- Offer a device, such as a printer, as a service.
- Support a device that can function in both ways: either as a terminal accessing network services or as a device offered as a service. An example of a device that can function in both ways is a printer that has a keyboard.

Note

The DECserver 300 does not support connection to wide-area networks via modems or to non-LAT hosts. For those connections, use the DECserver 200/MC system.

Terminal Server Concepts and Features

Some basic concepts and features of terminal server operation are described below:

A **service** is a resource on the network offered by a computer system or terminal server. Often a service consists of all the resources of a computer system in the network. As the user of a terminal attached to a DECserver 300 server, you can select any of the available services and establish up to eight simultaneous service sessions.

Local mode is the environment in which you interact directly with the server by entering DECserver 300 commands at the local prompt (Local>). With such commands, you can change port characteristics or connect to services. You enter local mode when you log in to your server. When you connect to a service, you leave local mode, but you can return to local mode at any time by pressing the BREAK key or the local switch character (see Chapter 6).

Service mode is the environment in which you interact with a service on the network to use its facilities. This is the most frequently used environment of the server. When you are in service mode, you enter commands at the prompts issued by the system that offers the service. For example, if the service is a computer system, you enter the commands that are known to that system.

A **service node** is a device on the local area network, usually a computer system or a terminal server, that offers services to terminal users on servers.

A **service session** is a connection through the server between your terminal and a service. You can establish several service sessions and move easily between them without having to return to local mode. You interact with one session at a time — your **current session.** To move from one service session to another, you do not have to disconnect or log out of your current session. All noncurrent service sessions remain active although terminal input and output are suspended. (If your terminal supports session management, the data exchange of noncurrent sessions can continue. See the discussion of session management at the end of this section.)

When you return to local mode, data exchange for the last service session used is also suspended. However, the service session you left is considered your current session until you create or resume another session. Data exchange for a noncurrent session resumes when you return to that session.

The Relationship of Service Nodes and Services

A single service can be offered by more than one service node, and a single service node can offer more than one service. You can use the CONNECT command to connect to any of these services.

To understand the relationship between a service node and the services it offers, consider a set of VAX computers 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 (for example, VMS1), 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 VAX system on the cluster.

The server can maintain its ability to establish service sessions for its terminals while also acting as a service node that offers one or more services. Each service includes at least one device that is attached to a server port, such as a keyboard printer. When the device is a keyboard printer, it can alternate between providing services and using services.

Types of Server Users

There are three types of terminal server users: privileged, nonprivileged, and secure. The following list describes each of these user types and provides a brief summary of their capabilities.

- Privileged User — A user who has access to **privileged commands** (the complete set of DECserver 300 commands). For security reasons, there is usually only one privileged user — the server manager. The privileged user is the only user who can execute commands that manage the server, its ports, and services.
- Nonprivileged User — A user that has access to the **nonprivileged commands** (a subset of the privileged command set). The nonprivileged command set is the default command set for all port users. This command set allows a terminal user to connect to services from an interactive port, modify certain port characteristics for that port, use the broadcast feature, and display information about the server, its ports, nodes, services, and terminal users.

- Secure User — A user of a **secure port** (a port that has been limited by the server manager to a subset of the nonprivileged commands). Secure users can connect to services, but cannot change all the port characteristics that nonprivileged users can change. Also, secure users can access only limited display information and cannot use the broadcast feature that is available to nonprivileged users.

Guidelines for Entering Server Commands

This guide describes all commands available to the nonprivileged user of a terminal on a DECserver 300 server. The nonprivileged commands and characteristics that are unavailable on secure ports are shaded in this guide.

Keep the following guidelines in mind when entering server commands:

- You can enter up to 132 characters in a command line.
- You can continue a command line onto a second terminal display line; 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 distinguishes 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, your input characters are ignored. You can interrupt local-mode output by pressing the BREAK key or entering the local switch character (also described in Chapter 6).

- You can use the following special keys when entering 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 un lock 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 the server detects the end of the line or until it finds an error, in which case the server displays an error message on your terminal.

Server Messages

The server can issue three types of messages:

- Informational Messages — Report events within the server or on the network. Some of these events are notification when starting, resuming, or disconnecting a service session.
- Warning Messages — Are issued when you enter a valid command that is executed by the server, but that may not have the effect you desire. For example, if you try to use the FORWARDS command to resume a second service session when only one session exists, the server reconnects you with the current service session and issues a warning message.

- Error Messages — Report problems that prevent the server from executing all or part of a command. There can be a problem with the command itself (such as an invalid parameter), or there can be server or network problems (for example, failure to make a connection).

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

2

Getting Started

This section shows you how to use the most commonly used server commands. It also explains automatic failover: the server's response to maintain your service session when the connected service node fails.

Logging In to a DECserver 300 Server

Press the RETURN key several times until you get a response from the server.

Note

If the server does not respond, check to see that your terminal is properly connected, 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.

If your server manager enabled log-in password protection on your port, the server prompts you with a pound sign (#) and a warning bell. You enter the log-in password assigned by your server manager, and press the RETURN key. (For security, the password is not displayed.)

If you enter the password correctly (or if no password is required), the server displays a log-in message and issues a prompt. If a user name has been permanently defined for your port, the local prompt (Local>) is displayed immediately, and you can begin to enter server commands.

Note

The local prompt is the default prompt, which can be changed by the server manager. Therefore, the local-mode prompt that appears on your terminal screen may be different.

If no user name has been defined for the port, the server prompts for one (Enter username>). You enter one of several valid responses to this prompt:

- A 1- to 16-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

A sample log-in procedure follows:

```
# password RET (not echoed)

DECserver 300 Terminal Server V1.0 (BL07) - LAT V5.1
BJ's Server

Please type HELP if you need assistance
Enter username> username RET

Local>
```

The local prompt indicates that you are logged in to the server in local mode. You can enter server commands whenever this prompt is displayed. "BJ's Server" is your server's identification, which is set up by the server manager.

Note

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

Accessing On-Line HELP Documentation

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

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

```
Local> HELP TUTORIAL
```

The server responds with a series of screens of tutorial information. At the end of each screen, press the RETURN key to pass to the next screen or enter ? to start again with the first screen. To exit from HELP, press CTRL/Z at any time. If you later reenter tutorial HELP, the server begins with the first screen.

To access on-line reference information for the DECserver 300 commands described in this guide, enter HELP in response to the local prompt.

```
Local> HELP
```

The server displays a list of command keywords and prompts again.

```
Topic?
```

When you enter a command keyword from the list, for example, SET, the server briefly describes the function performed by the command 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 know which option you want help for, you can request specific HELP information at the local prompt. For example, to access information about specifying flow control, enter this command:

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

At any HELP prompt, 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 (?).
- To return to the previous HELP prompt, press the RETURN key.

- To exit from HELP, enter CTRL/Z.

Note

HELP uses the graphic conventions [ ] and { } (described in the preface) to indicate command usage. Do not enter these graphic characters in your command lines.

For solving a problem with the server, see your server manager. Using the *DECserver 300 Problem Solving* manual your server manager can locate the cause of the problem.

Establishing a Session with a Service

To find the names of all services available to you, enter the SHOW SERVICES command at the local prompt (see Chapter 5). To initiate a service session, enter the CONNECT command with the name of the service (for example, SALES).

```
Local> CONNECT SALES
```

You can associate a **preferred service** with 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. Some protected services prompt you for a password. To establish the service session, 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 echoed)
```

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

Once your connection is established, you are prompted by the service. You remain in service mode until you log out from the service or until you switch to local mode while maintaining your service session. If the node offering the service terminates the session, a message displays, and your terminal returns to local mode (see the exception described under Automatic Failover in this chapter).

If two or more service nodes offer the same service, your connection request is sent to the node with the highest **service rating.** The node with the highest rating is the one that is least busy. The SHOW SERVICES command, discussed in Chapter 5, displays the service ratings of each service.

Where a service node is a terminal server, the main factor contributing to the terminal server's service rating is the number of available ports offering the service. If all ports on two or more servers offering the service are busy, your connection request is put in a queue at the server that has the greatest queuing capability (if the conditions described below are met).

A queue is a list of connection requests waiting for attention from the server. The queue ensures that your connection request is processed on a first-come first-served basis. Each server has a maximum queue size, defined by the server manager. A server's queuing capability is determined by the number of available queue entries — the maximum queue size minus the number of requests currently in the queue.

Queuing of your connection request occurs if:

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

  and

- You have enabled queuing for your terminal's port on your server. (Use the SET/DEFINE PORT command to enable or disable queuing; see Chapter 6.)

When your connection request is queued, your server displays a message telling you how many users are queued for that service. Your server periodically checks the status of the requested service and informs you of your current position in the queue. A queued connection request is filled when a port that matches the request becomes available.

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 your connection request has in the queue of the server that offers PRINTER. The next three messages shown in the example are periodic update informing you of the current 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. If you want to switch to another service session or connect to another service, you must end the queued connection request by pressing the BREAK key or the defined local switch character (see Chapter 6).

Returning to Local Mode from Service Mode

To return to local mode without ending your service session, press the BREAK key or use a local switch character (see Chapter 6).

In local mode you can establish other service sessions, as explained in Chapter 3.

Resuming Your Current Session from Local Mode

To resume your current service session, enter RESUME.

```
Local> RESUME
```

When you reenter a service session, the server displays the service name and the session number (unless you have disabled VERIFICATION on your port; see Chapter 6).

Ending a Session

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

```
Local> DISCONNECT
```

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

Logging Out of the Terminal Server

To log out from the server, enter the LOGOUT command.

```
Local> LOGOUT
```

LOGOUT disconnects all your existing service sessions. If you are using session management (see Chapter 9), enter LOGOUT PORT to disconnect all the service sessions and to log out your terminal from the server.

Automatic Failover

The DECserver 300 server provides a failure-recovery function called **automatic failover**. This function takes over automatically if your current service session is disrupted because the service node fails. Automatic failover is attempted if the service you are using is offered by two or more service nodes (as with a VAXcluster service). Automatic failover attempts to connect you to the same service on an alternative service node. 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 on only one node, and if the AUTOCONNECT characteristic is ENABLED on your port (see Chapter 6), the server periodically continues to try to reconnect you to the requested service. If session management is in effect on your terminal, the AUTOCONNECT and failover functions, for any noncurrent service sessions, continue without interruption when you switch to another session.

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. When a service is busy, a queued connection request has higher priority than the autoconnect requests, guaranteeing connection on a first-come first served basis. Your connection request will be honored before any requests that are not queued. 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. Note that when the initial connect is rejected for reasons other than the service being busy, queuing does not occur but autoconnect can occur.

You can discontinue the failover recovery attempts, the autoconnect function, or the queued connection request by returning to local mode; press the BREAK key or a local switch character.

3

Multiple Sessions

You can have more than one service session at the same time. You can have sessions with different services, and you can have multiple sessions with the same service. However, you can use only one session at a time.

The number of service sessions that your port can support at one time is determined by the server manager. If you try to exceed your service 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 section 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 discussed in this section take on a new meaning:

- BACKWARDS
- FORWARDS
- RESUME
- DISCONNECT
- LOGOUT

Chapter 9 describes how these commands differ during use of session management terminals.

Establishing Additional Sessions

To establish another service session, press the BREAK key or use a local switch character to return to local mode. Then enter another CONNECT command with the name of the service you want (for example, MICRO).

```
Local> CONNECT MICRO
```

If the service is busy, your request may be queued (Chapter 2 discusses queuing).

Switching to Service Sessions from Local Mode

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

```
Local> SHOW SESSIONS

Port 8:       Mona Lisa        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 the order of their creation. If the service node name differs from the service name, the node name is shown in parenthesis after the service name. Your current service session (the last one used) is at the top of the list.

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

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

```
Local>RESUME SESSION 1
```

To return to the service session following the current one in the list, enter FORWARDS. To return to the service session preceding the current one, enter BACKWARDS.

```
Local> FORWARDS

Local> BACKWARDS
```

In the previous example, 3 is the current service session; FORWARDS takes you to session 4, and BACKWARDS resumes session 2. When the current service session is last on the list, FORWARDS resumes the session at the top of the list. Likewise, when the current session is at the top of the list, BACKWARDS resumes the session at the bottom.

Switching Service Sessions While in Service Mode

You can switch service sessions while in service mode (without returning to local mode) by using forward- and backward-switch characters, which move you through service sessions in the same order as the FORWARDS and the BACKWARDS commands. (See Chapter 6 for information about setting switch characters.)

Note

Switch characters are ignored if your service session is set to PASSALL or PASTHRU mode (see Chapter 6). They are also ignored if your terminal is under control of session management.

Disconnecting Noncurrent Sessions

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

```
Local> DISCONNECT SESSION 2
```

To end all your service sessions, enter DISCONNECT ALL.

```
Local> DISCONNECT ALL
```

4

Connecting to Specific Nodes and Ports

You can use the CONNECT command to connect to any available node (see Chapter 2). You can also use the CONNECT command to connect to a service at a specific service node port. For example, if it is important for you to connect to a particular printer associated with the service PRINTING, you can specify the service node where that printer is attached. In this case, the printer is attached to a port on a server that is acting as a service node.

The full command syntax is described below, followed by several examples.

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

service-name	Specifies the service to which you wish 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 wish to connect. Use SHOW SERVICES *service-name* (see Chapter 5) to display the nodes offering the specified service or ask your server manager. If you omit NODE but specify DESTINATION, the server connects you to a port on your (local) server. If you omit both, the server connects you to a port on the highest-rated node offering the service.

DESTINATION *port-name*
: Specifies a particular port to which you wish to connect on your local server or a remote server (see the server manager for port names). If you specify DESTINATION without a NODE specification, you are connected to the specified port on your server but only if your server offers the service you specify.

When you use the NODE or DESTINATION option, the node or port must offer the specified service and must be available. The session established in this way is not automatically failed over (see Chapter 2). However, if AUTOCONNECT is ENABLED (see Chapter 6) and the service was disconnected abnormally (such as by a failure of the service node), the server attempts to reconnect your service session.

When a connection is completed, you receive the log-in prompt of the service (if it issues one). If a connection is not completed, the server returns an explanatory message. Protected services such as those that offer dial-out modems can require you to enter a password before the connection is allowed.

Examples:

The following examples show the CONNECT command used for connecting to the service PRINTING.

```
Local> CONNECT
```

Connects you to PRINTING if PRINTING is set up as your preferred service (see Chapter 6).

```
Local> CONNECT PRINTING
```

Connects you to the service PRINTING on a free port on the highest-rated service node offering the service.

```
Local> CONNECT PRINTING NODE SERVER2
```

Requests a connection to service PRINTING at any port on service node SERVER2.

```
Local> CONNECT PRINTING NODE SERVER3 DESTINATION PRINTER_1
```

Requests a connection to service PRINTING on node SERVER3 at port PRINTER_1.

5

Displaying Information

The DECserver 300 server stores characteristics and status information that you can display by using SHOW and LIST commands.

- SHOW commands display the server's operational characteristics. The values of these characteristics determine the current operating conditions of the server. The values reflect any changes that you have made using SET commands (see Chapter 6). The operational characteristics are stored in the **operational database** (sometimes called the volatile database).
- LIST commands display the server's permanent characteristics as defined by the server manager or as modified by your DEFINE PORT commands (see Chapter 6). The values of these characteristics define the basic operating conditions of the server. They are stored in the server's **permanent database**. When you log into a port, the operational characteristics take on the values of the permanent characteristics defined for that port.

Depending on the entity for which you wish to display information, you can select one of several different display types, each of which displays different information.

- CHARACTERISTICS — Displays current settings of all characteristics that can be set or defined for the specified entity.
- COUNTERS — Displays current counter values for the specified entity. Counter information is useful for evaluating network and server performance. (Ask your server manager for details.)
- 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.

For detailed descriptions of the displays that appear on your server, see the *DECserver 300 Management* manual.

The following pages list all nonprivileged display commands alphabetically by the displayed entity. Command descriptions use the graphic conventions described in the intro to this document.

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.

Note that this display command is not available to you if the server manager has enabled the limited view feature for your port.

SHOW NODES [*node-name* | ALL] [COUNTERS | STATUS | SUMMARY]

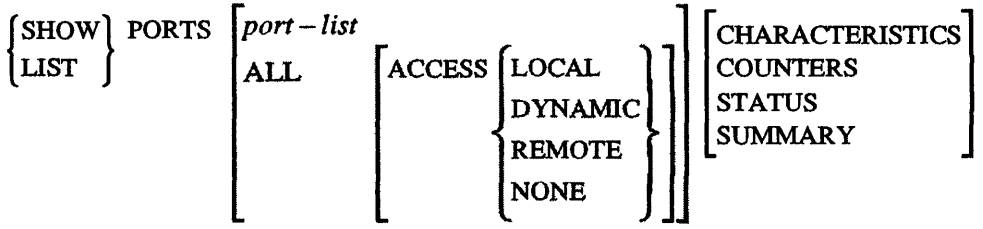
node-name	Displays information for the specified node only.
ALL	Displays information for both reachable and unreachable nodes and for nodes whose availability is unknown. Unreachable nodes are nodes that you cannot currently connect to or communicate with. If you do not specify ALL or a node name, only 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, and services. This is the default display type when you specify a node name.
SUMMARY	Displays one-line summary 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/LIST PORTS — Displays selected port information.



SHOW PORTS	Displays operational information about the port(s).
LIST PORTS	Displays permanent information about the port(s). You can LIST only CHARACTERISTICS and SUMMARY information.
port-list	Displays information about a specific list of ports. If omitted, information is displayed for your port. Port numbers in a list must be separated by commas and ranges specified by a hyphen (e.g., 1,2,5-8).
ALL	Displays information about all ports on the server.
ACCESS	Displays information about all ports having the type of access you specify.

LOCAL	Normal local connection access
DYNAMIC	Remote or local connection access
REMOTE	Remote connection access only
NONE	No access

CHARACTERISTICS	Displays definable characteristics for the specified port(s). This is the default display type when you specify a port number 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 one-line summary information for the specified port(s) including port number, accessibility, status, and local services. SUMMARY 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.

SHOW QUEUE [ALL | NODE *node-name* | PORT *port-list* | SERVICE *service-name*]

ALL	Displays information for all queue entries on the server. ALL is the default display type.
NODE *node-name*	Displays information for all queued connection requests from the specified node.
PORT *port-list*	Displays information about a specific list of ports. If omitted, information is displayed for your port. Port numbers in a list must be separated by commas and ranges specified by a hyphen (e.g., 1,2,5-8).
SERVICE *service-name*	Displays information for all queue entries for the specified local service.

Example:

```
Local> SHOW QUEUE ALL
```

This command displays information for all queue entries on the server.

SHOW/LIST SERVER — Displays selected information about the server.

{SHOW | LIST} SERVER [CHARACTERISTICS | COUNTERS | STATUS | SUMMARY]

The LIST command displays CHARACTERISTICS and SUMMARY only.

CHARACTERISTICS	Displays definable characteristics for the server, listing the current value and default for each. This is the default display type.
COUNTERS	Displays current counter values for the server and the Ethernet.
STATUS	Displays status information for the server such as the number of active ports, users, and queue entries on the server; the number of services available; and the names of reachable nodes.
SUMMARY	Displays one-line summary information for the server such as the server's software version number, LAT version number, Ethernet address, identification, and the groups for which the server offers services.

Example:

```
Local> SHOW SERVER
```

This command displays the characteristics for the server.

SHOW/LIST SERVICES — Displays selected information about network services.

{SHOW / LIST} SERVICES [*service – name* / LOCAL / ALL] [CHARACTERISTICS / STATUS / SUMMARY]

SHOW SERVICES	Displays current information for network services currently available to your port.
LIST SERVICES	Displays permanent characteristics of local services available to your port.
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 services in the network that are authorized for your port (available and unavailable).

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 (default for SHOW with *service-name*). The service rating number shown for each node reflects that service node's capacity to accept new sessions for the specified service (a higher number indicates a higher capacity).
SUMMARY	Displays one-line summary information for the specified service(s), including name, status, and ID (default for SHOW without *service-name*).

Example:

```
Local> SHOW SERVICES 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 service sessions on the port, including session number, service, and data transparency mode (see Chapter 7). If you do not specify ALL or a port number, the server displays service sessions for your port only.

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

SHOW SESSIONS	Displays service sessions for your port.
PORT	Displays service sessions for the specified port.
port-lists	Displays service sessions for the specified port(s). Port numbers in a list must be separated by commas and ranges specified by a hyphen (e.g., 1,2,5-8).
ALL	Displays service sessions for all ports.

Example:

```
Local> SHOW SESSIONS PORT 2
```

This command displays information about the service sessions active on port 2.

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

SHOW USERS

6

Changing Port and Session Characteristics

You can change the operating characteristics of your port and session. You change your port's operating characteristics to affect the port's interaction with the server and the service nodes. You change your service session's operating characteristics to affect how the server handles certain control characters exchanged during the session. This section first discusses how to change port characteristics. Next, it discusses session characteristics.

Changing Your Port's Characteristics

To change your port's operating characteristics, use the SET PORT or DEFINE PORT command:

- SET PORT — Changes operational characteristics for the current login. These changes remain in effect until you change them again or until you are logged out of your port.
- DEFINE PORT — Changes permanent characteristics. These are stored by the server and become effective the next time you log in to your port. They remain in effect for all future logins until you change them again with another DEFINE PORT command. You can use the DEFINE PORT command at non-secure ports only.

$$\left\{\begin{matrix}\text{SET} \\ \text{DEFINE}\end{matrix}\right\} \text{[PORT]} \ \textit{characteristic} \ \textit{[characteristic(s)]}$$

You can specify multiple characteristics separated by spaces and/or commas, up to a maximum of 132 characters per command line.

Port characteristics are described by function on the following pages and are summarized at the end of this book.

Note

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

Setting Switch Characters

You can set switch characters to use when you want to move between service sessions without returning to local mode. You can also use the switch characters while you are in local mode to move to a service session. You set a switch character by equating it with a keyboard character, as explained below.

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 set your switch characters to any characters that you will be typing as input 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 CONTROL key and a keyboard character. The server displays this key combination as ^*x* (for example, ^~).

To set your own switch characters, enter your chosen characters in the following commands. Enter NONE to cancel a previously set switch character.

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

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

Example:

```
Local> SET PORT FORWARD ^F
```

This command sets CTRL/F as your forward switch character. You can now enter CTRL/F to switch directly to the service session following your current one in the SHOW SESSIONS list.

BACKWARD Switch — Specifies a switch that moves you to the service session preceding your current one in the SHOW SESSIONS list. This switch operates like the BACKWARDS command (see Chapter 3).

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

Example:

```
Local> SET PORT BACKWARD ^B
```

This command sets CTRL/B as your backward switch character. You can now enter CTRL/B to switch directly to the service session preceding your current one in the session list.

Note

On terminals under control of session management, you cannot use the FORWARDS and BACKWARDS switches to move between sessions. You must use a dedicated key on the terminal to move between sessions. See Chapter 9.

LOCAL Switch — Specifies a switch that moves you from a service session to local mode.

{SET / DEFINE} [PORT] LOCAL [SWITCH] {*character* / NONE}

Example:

```
Local> SET PORT LOCAL `
```

This command sets [`] as the local switch character that you can use instead of [BREAK] for normal BREAK key functions.

Setting the BREAK Key

You can set your port so that the BREAK signal is sent to your current service session instead of to the server, or so that the signal is ignored while you are in service mode. However, if you set the BREAK characteristic to REMOTE or to DISABLED, you should set a local switch character (see the preceding subsection) 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. See the example below.

{SET / DEFINE} [PORT] BREAK {LOCAL / REMOTE / DISABLED}

LOCAL	Sends the BREAK signal to the server and causes you to return to local mode.
REMOTE	Sends the BREAK signal to the service node during a service session.
DISABLED	Causes the BREAK signal to be ignored.

Example:

```
Local> SET PORT BREAK REMOTE
```

In this example, the BREAK signal is sent to the service node rather than being intercepted by your server.

Specifying a Preferred Service

You can specify a preferred service; the one to which you automatically connect when you enter a CONNECT command without a service name. Also, when you log on, you are connected to your preferred service. To do this, use the command described below. Identify the preferred service by its service name, and include the node and/or port name if desired. (Chapter 4 describes these options in detail. Note that if you specify a node or port, the server will not attempt automatic failover.) Specifying NONE for any option cancels the last value entered for that option; for example, if you specify NONE for the service name, you cancel the previously established preferred service.

{SET / DEFINE} [PORT] PREFERRED {*service – name* / NONE} (Continued on next line)

[NODE {*node – name* / NONE}] [DESTINATION {*port – name* / NONE}]

Example:

```
Local> SET PORT PREFERRED SALES NODE VMS2 DEST PH
```

This sample command sets the preferred service as SALES on the port named PH on node VMS2. Notice the DESTINATION keyword is abbreviated.

If you enable the autoconnect feature in conjunction with a preferred service, using the port characteristics described below, the server automatically connects you to your preferred service when you subsequently log in to the server. Make sure you use the DEFINE PORT command to set up the autoconnect and the preferred service for subsequent logins.

```
{SET   }
{DEFINE} [PORT] AUTOCONNECT {ENABLED }
                            {DISABLED}
```

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

Regardless of whether you have a preferred service, when you enable the autoconnect feature, your port automatically attempts to reconnect to a service that is disconnected abnormally (see Automatic Failover in Chapter 2).

Changing Your Port, Terminal, and User Identifiers

TYPE — Specifies the local mode display type for your port.

```
{SET   }
{DEFINE} [PORT] TYPE {ANSI     }
                     {HARDCOPY }
                     {SOFTCOPY}
```

ANSI	Specifies ANSI-standard video display with ANSI escape support (includes Digital Equipment Corporation personal computers and the VT series terminals).
HARDCOPY	Specifies format for paper-output terminals such as the LA36 and LA120. HARDCOPY can be used on any video terminal, but it displays deleted characters between backslashes (\) rather than erasing them.
SOFTCOPY	Specifies standard video display without ANSI escape support, such as for a VT52.

Example:

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

This sample command sets the local mode display format to HARDCOPY.

GROUPS — Service groups are associations between services and terminal server ports in your network. If your port is in the same group as a service, then:

- When you execute the SHOW NODES or SHOW SERVICES commands, that service and its service node appear in the displays.

  and

- You can establish a session with that service.

Your server manager authorizes groups for your port. In turn, you can enable or disable all or part of those authorized groups. Use the GROUPS characteristic to do this. (Use the SHOW PORTS command to display the groups authorized by your server manager and the current groups enabled on your port. By default, all authorized groups are enabled on your port.)

SET [PORT] GROUPS $\left\{\begin{matrix} group-list \\ \textbf{ALL} \end{matrix}\right\}$ $\left[\begin{matrix} \textbf{ENABLED} \\ \text{DISABLED} \end{matrix}\right]$

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

Example:

```
Local> SET 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 is sounded on your terminal when a character is typed in and lost due to an error or an overrun.

{SET / DEFINE} [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 name again).

The user name can be 1 to 16 ASCII characters. You must enclose the user name in quotation marks, as shown in the example below.

To clear a user name, enter empty quotation marks ("").

If you are the only user on your port, you can specify that your user name be permanently associated with the port by using the DEFINE command instead of the SET command.

Example:

```
Local> DEFINE PORT USERNAME "Mona Lisa"
```

This causes the name Mona Lisa to be permanently associated with the port so that the server no longer prompts for a user name during login.

Changing Your Port's Data Transmission Characteristics

For successful data transmission, the character size, speed, parity, and flow control for your port must match the corresponding characteristics for 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 ensuring that your terminal is set to match the current characteristics for your port (use the SHOW PORTS 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 permanent characteristics. To log back in, you must change your terminal settings again to match the port's permanent characteristics.

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

```
{SET   }
{DEFINE} [PORT] CHARACTER [SIZE] {7}
                                 {8}
```

PARITY — Specifies data parity type for your port.

```
{SET   }
{DEFINE} [PORT] PARITY {EVEN }
                       {ODD  }
                       {MARK }
                       {NONE }
```

Note

If your server manager enabled the autobaud feature on your port, you must specify on the terminal device (not on the server) one of the following combinations of character size and parity:

- Character size 8 and no parity

  or

- Character size 7 and even parity

SPEED — Specifies port speed in bits-per-second. Possible values are 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600 (default), and 19200.

If your server manager enabled the autobaud facility, your port automatically matches its speed to that of your terminal.

```
{SET   }          [INPUT ]
{DEFINE} [PORT]   [OUTPUT] SPEED speed
```

You can change the speed in one direction by specifying INPUT (the speed from your terminal to the server) or by specifying OUTPUT (the speed from the server to your terminal). By omitting both INPUT and OUTPUT, you change the speed in both directions.

Example:

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

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

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

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

DISABLED	Specifies no flow control between the server port and your terminal.
DSR	Specifies DSR (data terminal ready/data set ready) flow control. The server transmits data only when it detects DSR from the port device.
XON	Specifies transmit-on/transmit-off (XON/XOFF) flow control. This type of flow control is the default.

By default, flow control is enabled in both directions between the server port and your terminal. To enable or disable flow control in one direction only, specify INPUT for the flow from your port to the server, or OUTPUT for the flow from the server to your port.

{SET / DEFINE} [PORT] [**INPUT** / **OUTPUT**] FLOW [CONTROL] {**ENABLED** / DISABLED}

To revert from one-way flow control to full flow control, specify the ENABLED option for the direction of flow that was previously DISABLED. To disable all flow control, use the SET/DEFINE FLOW DISABLED command.

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 automatically when you start a session with a service.

```
{SET   }
{DEFINE} [PORT] AUTOPROMPT {ENABLED }
                           {DISABLED}
```

BROADCAST — Specifies whether your port receives local BROADCAST messages from other ports or from the server (such as server INITIALIZE messages).

```
{SET   }
{DEFINE} [PORT] BROADCAST {ENABLED }
                          {DISABLED}
```

MESSAGE CODES — Specifies whether a 3-digit message code appears with server status messages and error messages. The *Terminal Server Commands and Messages* manual lists all of the message codes.

```
{SET   }
{DEFINE} [PORT] MESSAGE [CODES] {ENABLED }
                                {DISABLED}
```

VERIFICATION — Specifies whether DECserver 300 informational messages are displayed at your terminal when you connect, disconnect, or switch sessions.

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

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. To switch to another session, press the BREAK key, which deletes your connection request from the queue. If you disable queuing, a connection request to a busy service is rejected, and you are free to switch or connect to another session.

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

Specifying Session Management (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.) See Chapter 9 for further details and session management.

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

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 to enable **data transparency**, causing such characters to become "transparent" to the server. The server will not intercept them 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 wish 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.

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.

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.

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.

7

File Transfers

You can transfer files between a personal computer (PC) connected to your server and another PC or host system on the network. (The other PC or host system is called the "partner" computer system.) The service node must support the LAT V5.1 protocol. Use the file transfer program available on the PC from which you initiate the transfer. Before you transfer a file, you must set up the server port connecting the PC so that the port supports file transfers. Use the following steps to transfer your files:

1. Insure that the BREAK key is a local switch; enter the following command:

   ```
   Local> SET PORT BREAK LOCAL
   ```

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

3. During a service session, the server normally 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 if 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 SESSIONS command.

d. See if your current session is set to "Passall" or "Pasthru." If it is set to "Interactive" instead, you must enable data transparency for your session, as explained below.

You can enable data transparency by using the SET SESSION PASSALL or SET SESSION PASTHRU command, as explained in step d in the preceding subsection. If the partner is a host service node, you can enable transparency by issuing a command to the host system, as shown in the example below. In this way, you do not have to switch to local mode.

For VMS service nodes using the LAT/VMS service software, use the following commands:

```
$ SET TERMINAL /PASSALL
$ RUN file-transfer-program
$ SET TERMINAL /INTERACTIVE
```

4. Run the file transfer program, as explained in your PC documentation.
5. After the transfer(s), press the BREAK key to return to local mode.
6. If you had to enable data transparency by command, you must now disable transparency so that the server will intercept switch and flow-control characters and resume sending server messages and user broadcasts to your port. To disable data transparency, use the following command:

```
Local> SET SESSION INTERACTIVE
```

8

Additional Features

This section explains how to:

- Lock your terminal from use by others when you are temporarily away from your terminal
- Test your port and detect problems
- Broadcast a message to another port on the server

Locking Your Terminal

If you 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, an error message displays.

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

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

If your password entries do not match, the server issues an error message and returns to the local prompt. If your entries do 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 echoed)
Local>
```

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

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* | NONE}] [WIDTH *n*]

COUNT *n* — Specifies the number of test lines to be sent. The range for COUNT is 1 to 65535. The default is 23. Specify NONE to cause the pattern to be displayed continuously.

WIDTH *n* — Specifies the number of characters per line (ranges: 1 to 132; default: 80).

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. The maximum message size is 115 characters, provided you do not exceed the limit for the entire command line (132 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 to not receive BROADCAST messages (see BROADCAST DISABLED in Chapter 6).

9

Using Terminals Supporting Session Management (TD/SMP)

The DECserver 300 terminal server supports terminals that provide session management capabilities. For a list of those terminals that provide these capabilities, see the *DECserver 300 Software Product Description (SPD)*. This section explains how session management works.

What Is Session Management

The session management facility (TD/SMP) is software shared by the server and your terminal, and it controls communications between them. With multiple service sessions, the software establishes a separate communications link for each session. Thus, communications can occur over all the links simultaneously.

You can set up multiple service sessions on any terminal supported by the DECserver 300 unit. But without session management, your terminal displays the output of the current service session only, while suspending the data exchange with other connected service sessions. In contrast, terminals supporting session management can process all the service sessions simultaneously without suspending the data exchange with the noncurrent sessions. Some of these terminals can also display the output of all the connected service sessions simultaneously on a divided display screen. While you interact with one of the service sessions (the current session), your terminal continues displaying the output of the other sessions.

Also, a session management terminal maintains the context of application-defined keys, keypads, or device attributes independently 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. Thus, 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 screen scrolling and the output of another session with jump screen scrolling, as dictated for each session. 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 restores 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.

Figure 9–1 shows how multiple service sessions are handled *without* session management. The terminal and server do not simultaneously maintain separate links between each service session and the terminal. Therefore, only one service session at a time can exchange data with the terminal, and the terminal cannot maintain definitions for keys and device attributes independently for each session.

Figure 9–1: Multiple Sessions Without Session Management

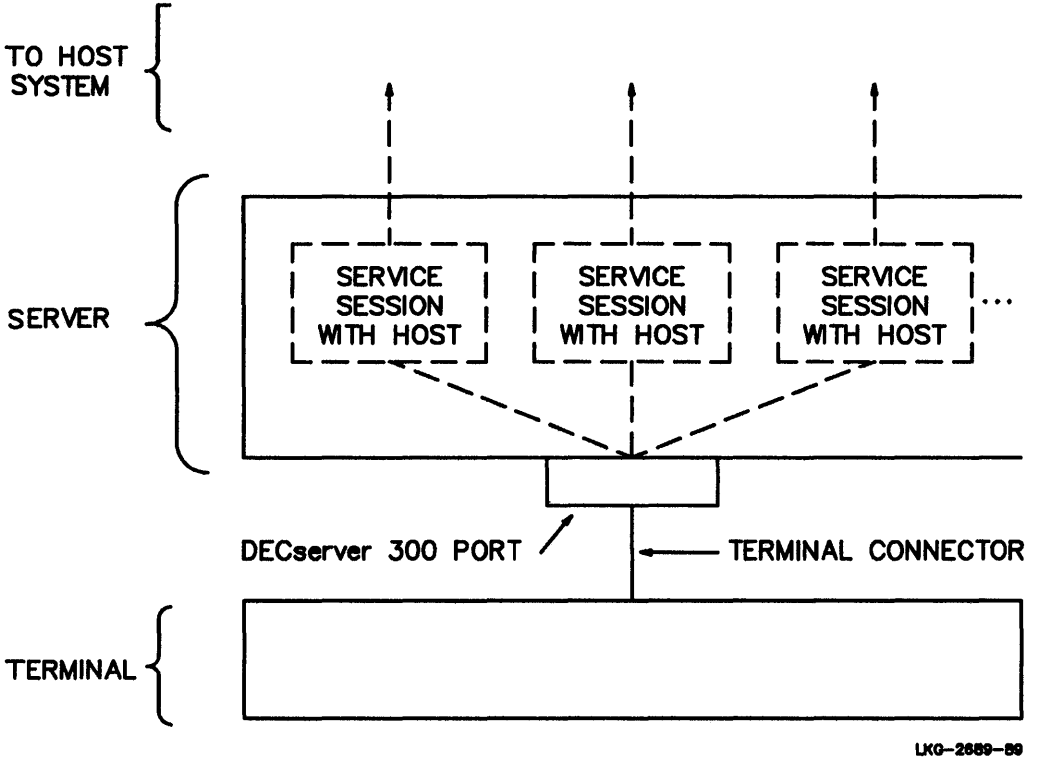
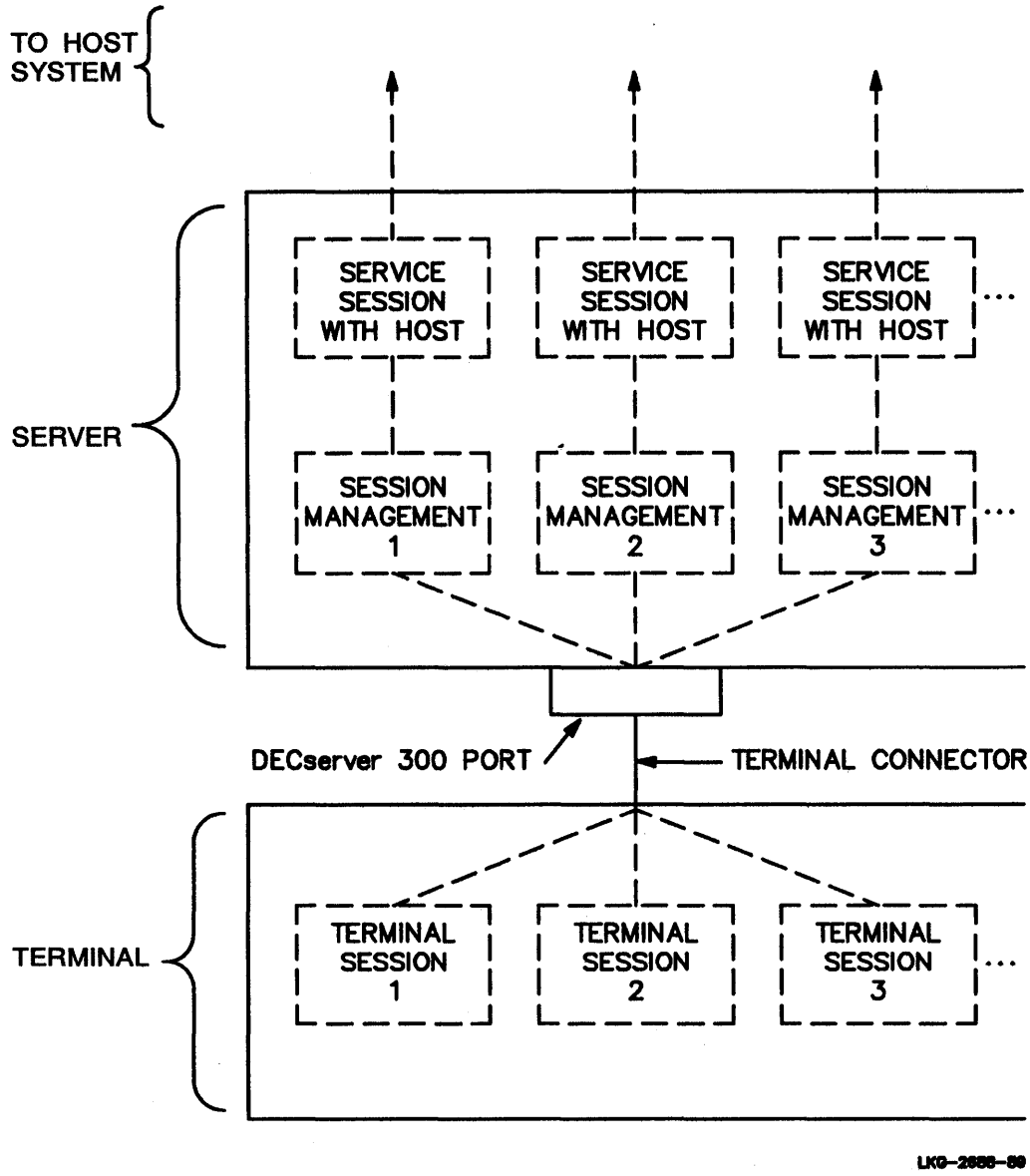


Figure 9–2 shows how multiple service sessions are handled *with* session management. The software lets you open one or more terminal sessions at your terminal. Each terminal session offers a local mode and allows you to establish one service session.

The server manages the link between a terminal session and a service session (if one is established). With multiple terminal sessions, the server manages every link independently. It transmits all data exchanged between the services and your terminal simultaneously over a single physical line. Specifically, the session management software takes all the data streams being sent by the services and funnels them into a single stream from the server to your terminal. Your terminal then splits this stream back 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. By maintaining each terminal session independently, the session management software lets your terminal maintain user-defined keys or device attributes independently for each service session.

Figure 9–2: Session Management and Multisessions



Benefits and Restrictions

Session management has the following benefits:

- Manages terminal sessions
- 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:

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

The session management and terminal features available to you depend on the capabilities of your terminal. Also, your terminal's operating features (set-up) must be set to support session management. See the documentation supplied with your terminal.

Note

In the documentation supplied with these terminals, the term "session" corresponds to "terminal session," as defined in this guide (see the Introduction chapter in this guide).

You open a terminal session from your terminal; the server does not initiate terminal sessions. For the server to respond to your request to open a terminal session, you must enable session management (MULTISESSIONS) for your terminal's port. Use the appropriate SET or DEFINE command, as explained in Chapter 6.

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 300 Software Product Description* for a list of terminals supporting session management.

For each terminal session, you can establish one service session only. The number of terminal sessions you can open depends on your terminal and on the session limit defined for your server port. For your terminal's limits and instructions for establishing terminal and service sessions, see the appropriate documentation supplied with your terminal. For the server port session limit, see your server manager.

If the service you request is busy and your connection request is queued, you can switch to another session (using the key dedicated to session switching) without deleting the queued request. This feature works while your terminal is in session management mode only.

If your terminal prompts you for a service name as part of the procedure for opening a terminal session, you can enter the name of the service you wish to connect to. The server then connects you to that service. In this way, you bypass local mode when opening terminal sessions. When you enter a service name at the terminal prompt, you can specify the service node and/or port where the service is offered, using the same syntax used with the server CONNECT command. Thus, if you want to connect to the service SALES on node VAX1, type the following:

```
SALES NODE VAX1
```

If you want to connect to the service PRINTER on port PORT_1 of node SERVER1, type:

```
PRINTER NODE SERVER1 DESTINATION PORT_1
```

If you do not specify a service name at the terminal's prompt, the local (Local>) prompt appears. You can then use the SHOW SERVICES command to display available services and use the CONNECT command to establish a service session for your terminal session. One exception: you do not get the local prompt if you have a preferred service with autoconnect enabled. In this case, when you do not enter a service name at the terminal prompt, the server automatically connects you to your preferred service. You can instead enter LOCAL as the service name at the terminal prompt. The server responds by placing your terminal in local mode instead of automatically connecting to your preferred service. The server responds to the service name LOCAL only when you open terminal sessions in session management.

Because each terminal session is limited to one service session, you cannot use the local mode of your current terminal session to connect to another service. You must open another terminal session and use that session's local mode. (To open another session, use the appropriate terminal action.) Likewise, to switch between service sessions, you cannot use local mode BACKWARDS and FORWARDS commands. You must use the appropriate terminal action, such as a dedicated switch-session key. (Each terminal session "knows" only one service session, so the BACKWARDS and FORWARDS commands are meaningless. The switching has to be done by the terminal.) For the same reason, you cannot use the forward and backward switch characters while in service mode. You can use the RESUME command from local mode but not the RESUME SESSION *session-number* command. The next section summarizes the unique meanings of local mode server commands during session management.

To disable session management, specify DISABLED with the SET PORT MULTISESSIONS command. This command string disconnects all active service sessions. Use the DEFINE PORT MULTISESSIONS DISABLED command string to prevent session management from being enabled automatically when you log in to the server.

Local Mode Server Commands During Session Management

You can access local mode from any terminal session. To get to local mode from a service session, press the BREAK key or a local switch character.

The Table 9–1 lists the local mode server commands that have new meaning during session management. The brief command descriptions include the restrictions that apply to their usage during session management.

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

Command	Description
CONNECT	Establishes a service session for any terminal session. You cannot use it to establish an additional session. To do so, you must open another terminal session.
DISCONNECT DISCONNECT ALL DISCONNECT SESSION *session-number*	The DISCONNECT command disconnects the current service session and returns you to local mode for the terminal session. The DISCONNECT ALL command disconnects all service sessions on your port. All terminal sessions return to local mode. Neither command disconnects terminal sessions. You can use the DISCONNECT SESSION *session-number* command to disconnect 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 the next subsection for further details on the DISCONNECT command.
LOGOUT LOGOUT PORT	LOGOUT closes your current terminal session only and disconnects the service session associated with it (if there is one). You are not logged out of the server. You can open or switch to another terminal session. LOGOUT PORT does a full logout, logging you out of the server, closing all terminal sessions and service sessions.
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 DEFINE 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 terminal session, enter the name "LOCAL" when your terminal prompts you for a service name.

Disconnecting Sessions

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

- **Disconnecting Your Current Service Session**

  If you are currently in a service session, press the BREAK key to enter local mode, then type the DISCONNECT command. This takes you to local mode for the current terminal session.

- **Disconnecting a Noncurrent Service Session**

  If you are currently in a service session, press the BREAK key to enter local mode, then type the DISCONNECT SESSION *session-number* command, specifying the number of the service session you want disconnected. When you switch to the terminal session of the disconnected service session, the local mode prompt appears. No service session is established for that terminal session.

- **Disconnecting Your Current Terminal Session and the Associated Service Session**

  Two ways to disconnect both the terminal session and an associated service session are:

  - Log out of the connected host service.

    or

  - Press the BREAK key to enter local mode; then type the LOGOUT command.

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

- **Disconnecting All Service Sessions on Your Port**

  Press the BREAK key to enter local mode, and then type the DISCONNECT ALL command. This disconnects all service sessions but not the terminal sessions. Your terminal enters local mode for each terminal session.

- **Disconnecting All Terminal and Service Sessions on Your Port**

  Two ways to disconnect all terminal and service sessions on your port are:

  - If you are in a service session, press the BREAK key to enter local mode; then type the LOGOUT PORT command. This also logs out your terminal from the server and disables session management.

    or

  - If you are in local mode, type the SET MULTISESSIONS DISABLED command. This disables session management but leaves you logged into the server (in local mode).

Failure Recovery

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

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Command Summary

Commands are listed alphabetically.

BACKWARDS

BROADCAST PORT *port-number message-text*

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

DISCONNECT [SESSION *session – number* | ALL]

FORWARDS

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

LOCK

LOGOUT [PORT]

RESUME [SESSION *session-number*]

{SET | DEFINE} [PORT] *characteristic* [*characteristic(s)*]

```
SET SESSION {INTERACTIVE}
            {PASSALL    }
            {PASTHRU    }

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

{SHOW} PORTS [port-list                                    ]  [CHARACTERISTICS]
{LIST}       [ALL      [ACCESS {LOCAL  }]]                 ]  [COUNTERS      ]
                                {DYNAMIC}                    ]  [STATUS        ]
                                {REMOTE }                    ]  [SUMMARY       ]
                                {NONE   }

SHOW QUEUE [ALL                  ]
           [NODE node-name       ]
           [PORT port-list       ]
           [SERVICE service-name ]

{SHOW} SERVER [CHARACTERISTICS]
{LIST}        [COUNTERS       ]
              [STATUS         ]
              [SUMMARY        ]

{SHOW} SERVICES [service-name] [CHARACTERISTICS]
{LIST}          [LOCAL       ] [STATUS        ]
                [ALL         ] [SUMMARY       ]

SHOW SESSIONS [PORT port-list]
              [ALL           ]

SHOW USERS

TEST [PORT] [COUNT {n   }]  [WIDTH n]
           [       {NONE}]
```

Summary of User-Definable Port Characteristics

SET PORT characteristic options are listed alphabetically below. For details, see Chapter 6.

AUTOCONNECT { ENABLED / **DISABLED** }

AUTOPROMPT { **ENABLED** / DISABLED }

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

BREAK { **LOCAL** / REMOTE / DISABLED }

BROADCAST { ENABLED / **DISABLED** }

CHARACTER [SIZE] { 7 / 8 }

FLOW [CONTROL] { DSR / XON / DISABLED }

{ **INPUT** / **OUTPUT** } FLOW [CONTROL] { **ENABLED** / 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 / MARK / **NONE**]

PREFERRED { *service – name* / **NONE** } NODE { *node – name* / **NONE** } DESTINATION { *port – name* / **NONE** }

QUEUING { ENABLED / **DISABLED** }

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

TYPE { ANSI / HARDCOPY / **SOFTCOPY** }

USERNAME "*username*"

VERIFICATION {**ENABLED** / DISABLED}

Installation-Specific Information

Use this space to record personal reference data.

Server Manager:

Telephone:

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How To Order Documents

This section provides all the information you need to order additional documents. 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 following sections give specific ordering procedures and the order numbers for software and hardware manuals.

Order Numbers

For software manuals, use the documentation kit order number. For hardware manuals, use the document order number. Software kits are available for two operating systems: VMS and ULTRIX–32.

VMS Software Documentation Kit

The order number for the DECserver 300 VMS documentation kit is QA–VTUAA–GZ. The kit contains one each of the following manuals:

- *DECserver 300 Software Product Description*
- *DECserver 300 Introduction*
- *DECserver 300 Software Installation (VMS)*

- *DECserver 300 Use*
- *Terminal Server User's Reference Card*
- *DECserver 300 Management*
- *Terminal Server Commands and Messages*
- *DECserver 300 Commands Quick Reference*
- *Local Area Transport (LAT) Network Concepts*
- *DECserver 300 Problem Solving*
- *Terminal Server Glossary*

ULTRIX–32 Software Documentation Kit

The order number for the DECserver 300 ULTRIX–32 documentation kit is QA–VTVAA–GZ. This kit contains the same manuals as the VMS documentation kit except that the ULTRIX–32 kit contains *DECserver 300 Software Installation (ULTRIX–32)* instead of the VMS version.

DECserver 300 User's Documentation Kit

The order number for the DECserver 300 User's Documentation kit is QA–VTUAB–GZ. The kit contains the following manuals:

- *DECserver 300 Use*
- *Terminal Server User's Reference Card*

Terminal Server Manager Documentation Kit

The Terminal Server Manager (TSM) documentation kit order number is QA–VDHAA–GZ. This kit is intended for the installer and manager of the TSM software product, and contains the following manuals:

- *Guide to Terminal Server Manager*
- *Terminal Server Manager Software Installation Guide*

Hardware Documents

Hardware documents ship with the DECserver 300 hardware, but extra copies of the following manuals can be ordered separately:

- *DECserver 300 Hardware Installation* EK–A0366–IN
- *DECserver 300 Identification Card* EK–A0368–IC

Ordering Procedures for Customers

If you are a customer, refer to Tables 1 and 2.

Table 1: How to Order by Phone

If You Live In	Phone
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Puerto Rico	(800) 754–7575 x2012
Canada	(800) 267–6215

Table 2: How to Order by Mail

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USA or Puerto Rico*	Digital Equipment Corporation CS2008 Nashua, New Hampshire 03061
Canada	Digital Equipment of Canada LTD. 940 Belfast Road Ottawa, Ontario, Canada K1G 4C2 Attn: A&SG Business Manager
Other	Digital Equipment Corporation A&SG Business Manager c/o Digital's local subsidiary or approved distributor

* Any prepaid order from Puerto Rico must be placed with your local Digital Subsidiary: (809)–754–7575 x2012.

Ordering Information for Digital Employees

Software Documentation Kits

If you are a Digital employee, use the Internal Software Order Form. The form is available from Office Services and the Software Supply Business (SBB). Complete the form according to instructions and mail it.

Hardware Manuals

If you are a Digital employee, you can order hardware manuals by telephone, VAXmail, or DECmail as follows:

- Telephone number: (508) 351–4323 (DTN: 234–4323)
- DECmail address: ORDER @NRO
- VAXmail address: NEST::ORDER

Note

If you use electronic MAIL, DECmail is preferred to VAXmail.

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