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DECserver 500 Software Installation (VMS)

Order No. AA–HS49D–TE

December 1989

This guide tells you how to install the DECserver 500 distribution soft–ware on VMS systems, how to establish these systems as down–line load hosts, and how to verifiy the system installation. This guide is intended for the software installer, either the VMS system manager or the network manager, and the server manager.

Supersession/Update Information:	This is a revised manual.
Operating System and Version:	VMS V5.0 to V5.2
Software Version:	DECserver 500 V2.0

This manual applies to Version 2.0 of DECserver 500 software and Ver-sion 5.0 to V5.2 of the VMS operating system, and all subsequent maintenance releases up to the next major product release.

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AA–HS49D–TE
December 1989

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Preface

This installation guide explains how to perform the following tasks:

- Install the DECserver 500 distribution software onto a VMS system that performs as a load host. The load host can be a single system or a member node of a VAXcluster system running DECnet Phase IV software.
- Configure the load host's node database, thereby enabling the system to perform load host functions, such as down-line loading the server software image.
- Verify the load host installation and the server system installation.
- Start the Terminal Server Configurator (TSC).

Note that system installation is a combination of hardware and software installation and requires coordination between the hardware installer and software installer. This manual and the appropriate DECserver 500 series hardware installation manual (depending on your system configuration) together describe installation of the DECserver 500 system.

If you have the Terminal Server Manager (TSM) software, an optional network management product available for VMS load hosts, read the documentation for this product before you look at the DECserver 500 documents. TSM affects the way you install and manage servers.

Intended Audience

This guide is for system managers or network managers who are responsible for making server products available on their Ethernets. A **system manager** is responsible for the VMS system that is about to be established as a load host. A **network manager** is responsible for the local area network (LAN).

To use this guide effectively, Digital Equipment Corporation recommends that you familiarize yourself with both DECnet Phase IV network management concepts and the VMS operating system.

Structure of This Manual

This manual contains the following chapters and appendixes:

Chapter 1	Introduces the DECserver 500 series terminal server and summarizes the installation, configuration, and verification procedures.
Chapter 2	Describes how to install the distribution software.
Chapter 3	Explains how to configure the load host's node database.
Chapter 4	Explains how to verify the load host installation by down-line loading the server image to new servers. This chapter also discusses how to verify the server system installation with a few server commands.
Chapter 5	Shows how to start TSC on a VMS load host.
Appendix A	Lists the names of the files in the DECserver 500 VMS distribution kit.
Appendix B	Discusses briefly the Remote Console Facility (RCF).
Appendix C	Contains examples of the installation and configuration procedures and verification by use of down-line loading and server commands.

Conventions Used in This Manual

To use this manual effectively, familiarize yourself with the conventions discussed in this section:

- All numbers are decimal unless otherwise noted.
- All Ethernet addresses are hexadecimal.

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 syntax indicate keywords that must be entered. You can enter keywords in either uppercase or lowercase. You can abbreviate command keywords to the smallest number of characters that distinguishes 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.
[ ]	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.)
BOLD	In summaries of characteristics, bold type indicates default values.
bold	In text, words appearing in bold type introduce new terms or concepts and can also be found in the Glossary.
key	Press the specified key. For example, RET means that you should press the RETURN key.
CTRL/*x*	Hold down the CONTROL key and simultaneously press the key specified by *x*. The server displays this key combination as ^*x*.

1
Introduction

This chapter introduces the DECserver 500 terminal servers and outlines the complete software installation procedure for VMS systems.

1.1 What Are the DECserver 500 Series Terminal Servers?

The DECserver 500 terminal servers consist of the DECserver 500 software and one of the following hardware platforms:

- The DECserver 500 terminal server
- The DECserver 510 terminal server
- The DECserver 550 terminal server

These Digital Equipment Corporation networking products are known as Ethernet **communications servers**.

A **server** is a computer system, or **node**, on which resources shared by the network are located. A server offers these resources to the other nodes. A communications server takes over some of the communications tasks required of network nodes. This is a resource it offers.

The DECserver 500 terminal server is a type of communications server called a **terminal server**. A terminal server connects to an Ethernet local area network (LAN) and enables terminals that are connected to it to access the system on the LAN.

1.2 Server Concepts

The following sections explain the aspects of the server that relate to software installation procedures.

The DECserver 500 series terminal servers consist of these components:

- DECserver 500 hardware , DECserver 510 hardware, or DECserver 550 hardware
- Corresponding firmware for DECserver 510 and 550
- DECserver 500 distribution software
- The Server image, which is down-line loaded, residing on a load host

Note

DECserver 500 V2.0 software supports all the DECserver 500 series hardware products.

The server also comes with additional software utilities that help maintain the operating product. For a detailed description of these utilities, see the *DECserver 500 Management* manual.

1.2.1 LAT Software

A network node does not need LAT protocol V5.1 to perform load host functions since, on VMS V5.0 to V5.2, installation of LATplus/VMS is bundled with the standard VMS release. However, LAT software is required for a system to offer services as a service node. Information about the LAT protocol is included in the basic VMS documentation set.

On remote access ports, the server permits VMS service nodes with LAT software to make requests for printers on server ports. These requests are called **host-initiated requests**.

1.2.2 Server Image

The server image contains executable code and the server's permanent database.

1.2.3 Load Hosts

The server hardware comes without its operational software, which is contained in the server image. The software installer installs the image file onto a load host where the software always resides. The image file and several other distribution files make up the software distribution kit**.**

The software installer's first task is to copy the distribution files from the distribution medium to a system designated as a load host by the network manager. A **load host** is a system that has the server image, several related files for customizing this image, and the node database with entries for specific servers (see Section 3.1.1).

A load host system can down-line load the server image to the server and can receive up-line dumps from it. Load hosts must be DECnet Phase IV systems on the same Ethernet as the server. To perform as a load host, a VMS system must be running DECnet–VAX V4.0 software.

1.2.3.1 Assigning Load Hosts

Digital advises the network manager to assign the following:

- A minimum of two load hosts for each server
- No more than ten servers per load host

Alternate load hosts free the server from dependence on one particular load host. If the primary load host is unavailable, an alternate system can down-line load the server and receive up-line dumps from it. Digital strongly suggests that the server have these load host functions available at all times. In addition, assigning no more than one load host for ten servers reduces the demand on the load host's resources.

1.2.3.2 Selecting Alternate Load Hosts: Non-VMS Systems

When you select alternate load hosts, you can choose any Digital system for which a software distribution kit is available, including the following:

- VMS V5.0 through V5.2
- RSX–11M–PLUS
- Micro/RSX

For information on establishing an operating system other than VMS as an alternate load host, see the *DECserver 500 Software Installation* manual for that operating system. You can find the guide for one of the other supported operating systems in the software distribution kit for that operating system. Or you can separately order any *DECserver 500 Software Installation* manual for another operating system.

1.2.3.3 Installing the 3270 Terminal Option Software

If your server has the 3270 Terminal Option (CXM04) line card, you will need to install the 3270 Terminal Option software after you have completed the DECserver 500 software installation. Refer to the *3270 Terminal Option Installation* manual for more information.

1.3 Installation Summary

This section outlines the software installation procedure. Please see the appropriate chapters for complete instructions.

As software installer, you have three responsibilities:

1. Installing the distribution software
2. Configuring the load host's node database
3. Verifying the load host installation and the server system installation

The purpose of these three activities is to establish your VMS system as a load host for one or more servers. A load host can be a single VMS system or it can be a member of a VAXcluster system. For a VMS system to act as a load host, it must be running DECnet software and it must be located on the same Ethernet as the server. For supported version numbers of DECnet software, see the *DECserver 500 Software Product Description* (SPD).

In addition to these three tasks, you must coordinate with both the hardware installer of new servers and the server manager of existing servers. Chapter 4 describes the coordinated effort in detail.

The following three sections outline the software installation procedure.

1.3.1 Installing the Distribution Software

Install the distribution software onto a VMS system with an automated procedure called VMSINSTAL.COM. VMSINSTAL does the following:

- Copies the files from the distribution media to the load host
- Creates the appropriate directory for these files
- Prints the DECserver 500 release notes when you specify OPTIONS N

VMSINSTAL also provides an installation verification procedure (IVP) that you can optionally use to verify that the DECSERVER directory exists, that all the files from the distribution kit are in the directory, and that the release notes are in the SYS$HELP directory.

See Chapter 2 for instructions on installing the distribution software. See Appendix A for a description of the software distribution files.

1.3.2 Configuring the Load Host's Node Database

After you copy the distribution software to your VMS system, configure its node database to support new servers, thus establishing it as a load host for those servers. Configure the database with an automated procedure called DSVCONFIG.COM. This configuration procedure file is part of the DECserver 500 software distribution kit.

To configure the load host's node database, you define an entry for each server in the following places:

- A data file called DSVCONFIG.DAT
- The DECnet operational database
- The DECnet permanent database

The DSVCONFIG.DAT data file is automatically created and maintained when you use DSVCONFIG, and it is part of the load host's node database. DSVCONFIG also automatically updates the DECnet volatile database and the DECnet permanent database. Configuration of a new server involves adding an entry to each of these databases.

The DSVCONFIG procedure copies the original distribution image file, DS5TSV.SYS, to create a unique image for each server being defined. The new image file is named DS5*node-name*.SYS.

There are additional configuration options. One of these, the restore option, is a tool for the system manager of the load host. It restores the DECserver configuration to the host DECnet database. Another option, the swap option enables you to swap an old DECserver system for a new DECserver system or to upgrade your existing server image file when you upgrade to V2.0.

See Chapter 3 for instructions on configuring the load host's node database to support servers for both single and VAXcluster systems.

1.3.3 Verifying the Installation

Your final responsibility is to verify the installation by doing the following:

1. Verifying load host installation
2. Verifying total server installation

See Chapter 4 for a detailed discussion of the verification procedure.

1.3.3.1 Verifying Load Host Installation

To verify installation of the load host, down-line load the uncustomized server image to the new servers. Verifying the load host installation means checking the following characteristics of the load host:

- It has the appropriate files in the correct directory.
- It has a correct entry in its node database for each new server.
- It can successfully down-line load.

Use the NCP LOAD NODE command from your VMS load host to down-line load the uncustomized image file. Then check the DECnet event logging messages to verify that the load was successful. See Chapter 4 for details on verifying the load host installation.

1.3.3.2 Verifying Total Server Installation

To verify the total server installation, log in to the running server and issue a few server commands (for example, TEST PORT, SHOW PORT, SHOW SERVICES, and CONNECT) at an interactive terminal connected to a server port. Verifying the total server installation means checking the following:

- That the correct version of the software is in the unit.
- That the server hardware operates with the new software.
- That the new software is running successfully.

See Chapter 4 for details on verifying the total server installation.

1.4 Making the Server Fully Functional

After you complete installation, configuration, and verification, the server manager can run TSC or the optional Terminal Server Manager (TSM) on the load host to customize each server image. To customize the server image, the server manager defines the appropriate values for server characteristics in the server's permanent database. See Chapters 3 and 5, as well as the *DECserver 500 Management* manual and the *Terminal Server Commands and Messages* manual, for information on customizing server image files with TSC.

Note

Digital recommends that the server manager use command files when configuring the server image with TSC or TSM. See Chapter 3 for more information.

Either you or the server manager must down-line load any customized server image files so that the servers become fully operational as specified.

See Appendix B for a brief discussion on using the Remote Console Facility (RCF) to warn server users that a down-line load is about to occur. Refer to Appendix C for step-by-step examples of the entire software installation.

2

Installing the DECserver 500 Distribution Software

This chapter describes how to prepare for installation and how to install the distribution software onto your VMS load host. To install the software, use VMSINSTAL.COM, an automated procedure, that is part of the VMS operating system.

2.1 Overview of VMSINSTAL

VMSINSTAL is an interactive procedure that performs the following tasks:

- Creates a directory called SYS$SYSROOT:[DECSERVER] on the load host, if necessary
- Copies the files from the distribution media into this directory
- Prints a copy of the DECserver 500 release notes when you specify OPTIONS N

2.2 Preparing to Run VMSINSTAL

Before you run VMSINSTAL, be sure to check the following:

- Make sure that you are installing V2.0 of the DECserver 500 distribution software on a load host running VMS V5.0 to V5.2.

- Determine which systems are designated as load hosts for the server. You must install the distribution software onto all of these systems. Ask your network manager or the person responsible for assigning load hosts.

  Note

  You do not need a separate license for each load host, but you do need a separate license for each server.

- Make sure that there are 1200 blocks of free disk space on each load host for copying the distribution files; furthermore, keep in mind that the software uses a peak of 1300 blocks during installation. Each additional server requires about 350 additional blocks. Note that additional space of 500 blocks is required for each server running the CXM04 line card.

- DECserver 500 system can be run on a tailored VMS system. The DECserver 500 system requires the following classes for installation/functionality:

  Network Support (NET VMS) for down-line load and maintenance functions.

  Utilities (UTIL VMS) for communications between the server and the service node.

  VMS Required Saveset

  If you run the VMSTAILOR program, make sure that your system retains these two classes.

2.3 VMSINSTAL Conventions

VMSINSTAL is an interactive procedure. When you start VMSINSTAL, a series of questions displays. After each question, the default response, if there is one, displays in brackets ([ ]). At the end of each question, either a colon (:) or a question mark (?) appears. Respond in the following ways:

- To answer a question, type your response after the colon or question mark, and then press RET (RETURN).

- To respond to a question with the default answer, just press RET .

- To get help about a question, type a question mark (?) in response to the question. After the help display, the question repeats.

See the VMS release notes for a complete description of VMSINSTAL.

2.4 Running VMSINSTAL

Running VMSINSTAL.COM requires the appropriate privileges. To determine what they are and whether you already have them, see the system manager.

Run VMSINSTAL.COM from the system manager's account. The installation procedure takes approximately 15 minutes. Note that anytime during the procedure you can abort the installation by entering CTRL/Y. The installation procedure then deletes all files it has created up to that point and returns you to the DCL level. You must invoke VMSINSTAL again to retry the installation procedure.

Follow these steps:

1. Place the distribution medium on the appropriate device drive.
2. Log in to the system manager account.
3. Log the installation procedure.

   Digital Equipment Corporation recommends that you log the installation procedure with the following command before you invoke VMSINSTAL:

   ```
   $ SET HOST/LOG node-name RET
   ```

   where *node-name* is the name of your system.

4. Start VMSINSTAL with these commands:

   ```
   $ SET DEFAULT SYS$UPDATE RET
   ```

   ```
   $ @VMSINSTAL DS5 device-identifier OPTIONS N RET
   ```

   Here, DS5 is the VMS three-character facility code for the DECserver 500 terminal server, and *device-identifier* is the device on which the distribution medium is mounted. OPTIONS N tells VMSINSTAL to give you the several options regarding copying, printing, or displaying the DECserver 500 release notes.

Note

Digital recommends that you specify OPTIONS N on the command line. If you do not want to print the DECserver 500 release notes or if you are interested in VMSINSTAL's other options, see the *VMS Guide to Software Installation*, which is part of the VMS documentation set.

If you are installing onto alternate load hosts with copied savesets, the VMSINSTAL command line format differs slightly. See the VMS release notes concerning VMSINSTAL.

VMSINSTAL displays the procedure title and the date and time. Then it continues with the following messages (the warning message appears only if DECnet is running):

```
%VMSINSTAL-W-DECNET, Your DECnet network is up and running.

%VMSINSTAL-W-ACTIVE, The following processes are still active:
  process_name

* Do you want to continue anyway [NO]?
```

5. Type YES and press RET to proceed with the installation.
6. VMSINSTAL asks the following question:

```
* Are you satisfied with the backup of your system disk [YES]?
```

   – If you answer NO, the installation procedure terminates. Take appropriate action and start the procedure again.

   – If backup is satisfactory, press RET to answer YES (default).

Note

If you are installing files onto a VAXcluster node, the messages indicate that the files are copied to the SYS$COMMON:[DECSERVER] or [SYSHLP] directory.

7. If you are installing from the distribution media rather than from copied save-sets, VMSINSTAL prompts you to mount the first volume:

```
Please mount the first volume of the set on device-identifier.

* Are you ready?
```

   Type YES and press RET . A confirmation message says that the medium is mounted.

8. The procedure continues with this message:

```
The following products will be processed:

DS5 Vn.n

        Beginning installation of DS5 Vn.n at hh:mm

%VMSINSTAL-I-RESTORE, Restoring product saveset A...
```

Note

> DECserver 500 software version numbers are not specified in this manual. For example, the DECserver 500 release notes file is shown as DS5*nnn*.RELEASE_NOTES. Here, *nnn* represents the version number. If you are installing DECserver 500 V2.0 software, the release notes file is DS5020.RELEASE_NOTES.

9. Some types of distribution media require several volumes. (More than one distirbution medium is delivered with your distribution kit.) For these types of distribution media, the procedure gives you a continuation message and tells you to mount the next volume (each volume is labled with a volume number):

```
%BACKUP-I-READYREAD, mount volume 2 on device-identifier:  for reading
Enter "YES" when ready:
```

   Mount the next volume, type YES, and press RET .

10. The procedure lists your options for printing and displaying the DECserver 500 release notes:

```
Release Notes Options:

        1.  Display Release Notes
        2.  Print Release Notes
        3.  Both 1 and 2
        4.  Copy Release Notes to SYS$HELP
        5.  Do not display, print, Or copy Release Notes

* Select option [2]:
```

Select one of these options. The DECserver 500 release notes might contain as many as 30 pages. Therefore, Digital recommends that you select option 2.

- If you select option 1, the following message displays on your screen:

  VMI$ROOT:[SYSUPD.DS5*nnn*]DS5*nnn*.RELEASE_NOTES;1

  The DECserver 500 release notes immediately display on your terminal.

- If you select option 2, VMSINSTAL asks you which queue you want to send the file to for printing:

  ```
  * Queue name [SYS$PRINT]:
  ```

  Press RET to print the release notes on the default printer, or specify another print queue. A message indicates that the system queued the file.

- If you select option 3, VMSINSTAL asks you which queue you want to send the file to for printing:

  ```
  * Queue name [SYS$PRINT]:
  ```

  Press RET to print the release notes on the default printer, or specify another print queue. A message indicates that the system queued the file for printing. Next, VMSINSTAL displays the release notes:

  VMI$ROOT:[SYSUPD.DS5*nnn*]DS5*nnn*.RELEASE_NOTES;1

  The release notes immediately display at your terminal.

11. After the system's queue message and the release notes are displayed (if you selected one of the display options), the procedure continues:

    ```
    * Do you want to continue the installation [N]?
    ```

    If you want to review the release notes, press RET to stop the procedure. Check for any changes that can affect this installation. (VMSINSTAL places the release notes in the file DS5*nnn*.RELEASE_NOTES in the SYS$HELP directory.)

    ```
    %VMSINSTAL-I-RELMOVED, The product's release notes have been success-
    fully moved to SYS$HELP.
    ```

    Otherwise, type Y or YES and press RET. (VMSINSTAL places the release notes in the file DS5*nnn*.RELEASE_NOTES in the SYS$HELP directory.) Skip to Step 17.

12. If you stopped to read the release notes, run the procedure again when you are ready to continue. Enter this form of the command:

    ```
    $ @VMSINSTAL DS5 device-identifier RET
    ```

13. VMSINSTAL displays the procedure title, the date, and time. It then continues with the following (the warning message appears only if DECnet is running):

    ```
    %VMSINSTAL-W-DECNET, Your DECnet network is up and running.

    * Do you want to continue anyway [NO]?
    ```

    Type YES and press RET to proceed with the installation.

14. VMSINSTAL asks the following question:

    ```
    * Are you satisfied with the backup of your system disk [YES]?
    ```

    Press RET to answer YES.

15. If you are installing from the distribution media rather than from copied savesets, VMSINSTAL prompts you to mount the first volume:

    ```
    Please mount the first volume of the set on device-identifier.

    * Are you ready?
    ```

    Type YES and press RET.

16. VMSINSTAL asks the following question:

```
* Do you want to continue the installation [N]?
```

Type YES and press RET .

17. A confirmation message says that the medium is mounted. The procedure continues with this message:

```
The following products will be processed:

DS5 Vn.n

        Beginning installation of DS5 Vn.n at hh:mm

%VMSINSTAL-I-RESTORE, Restoring product saveset A...

%VMSINSTAL-I-RELMOVED, The produuct's release notes have been
successfully moved to SYS$HELP

*Do you want to run the IVP after the installation [YES]?
```

The installation verification procedure (IVP) verifies that the DECSERVER directory exists, that all the files from the distribution kit are in the directory, and that the release notes are in the SYS$HELP directory. Digital recommends that you press the RETURN key to initiate IVP.

Type Y or YES and press RET .

```
        No more questions will be asked during the installation
```

18. VMSINSTAL continues with a few messages and a list of DECserver 500 VMS distribution files for both single and VAXcluster nodes.

```
%VMSINSTAL-I-RESTORE, Restoring product saveset B...

Your installation is now complete. After VMSINSTAL has completed:

1. Refer to the DECserver 500 Vn.n release notes to see if you now
   have to install any additional software from the distribution media.

2.  Execute a command procedure called DSVCONFIG.COM, which the
    installation procedure just copied to the SYS$COMMON:[DECSERVER]
    directory.

    For every new server, choose option 2, ADD A DECSERVER, to define
    the server in your VMS system's node database.

    For every existing server, choose option 3, SWAP AN EXISTING
    DECSERVER, to update the servers' software, and then run the
    configurator, SYS$ROOT:[DECSERVER]DS5CFG.EXE to reconfigure your
    images.

3.  Verify the installation, as described in the DECserver 500
    Software Installation Guide (VMS/MicroVMS).

4.  If you have Terminal Server Manager (TSM) software, register the
    terminal server in the TSM management directory.

    If you are installing more than one terminal server, first
    complete the installation of all of them, and then register them
    in the TSM management directory. Refer to the guidelines for
    registering terminal servers in the Guide to Terminal Server
    Manager manual.

5.  Inform the server manager that the installation is complete.

6.  The Installation Verification Procedure (IVP) for the DECserver 500
    can be found in the SYS$TEST and may run at any time by executing
    the command procedure DS5$IVP.COM

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target direc-
tories...
```

```
Beginning installation verification procedure for DECserver 500 Vn.n.

Successful creation of SYS$SYSROOT:[DECSERVER] directory

Successful installation of SYS$SYSROOT:[DECSERVER]DS5TSV.SYS

Successful installation of SYS$SYSROOT:[DECSERVER]DSVCONFIG.COM

Successful installation of SYS$SYSROOT:[DECSERVER]DS5CFG.EXE

Successful installation of SYS$HELP:[SYSHLP]DS5CFG.HLB

Successful installation of SYS$SYSROOT:[DECSERVER]DS5_020_DEFAULTS.COM

Successful installation of SYS$SYSROOT:[SYSHLP]DS5020.RELEASE_NOTES

Successful installation of SYS$SYSROOT:[DECSERVER]TSC$DS5_V20_GET_CHAR.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_ADD_LOCAL_SERVICE.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_CTS_RTS_PRINTER.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DEDIC_SERV_PRINT.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DEDIC_SERV_TERM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DIAL_IN_MODEM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DIAL_IN_OUT_MODEM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DIAL_OUT_MODEM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DSR_DTR_TERM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_GET_CHAR.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_HOST_INIT_PRINT.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_NON_LAT_HOST.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_PC_TERM_OR_SERV.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_PORT_DEFAULT.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_TERM_SWITCH.COM

Installation verification procedure for DECserver 500 V2.0 successful.

Installation of DS5 Vn.n completed at hh:mm

VMSINSTAL procedure done at hh:mm

$
```

Depending on your system, VMSINSTAL might give you the opportunity to make an entry in the software history log.

Note

The TSM files that display in the listing here are only accessible if you have TSM installed.

See Section 2.6 for the next step.

2.5 Installing onto Alternate Load Hosts

Digital Equipment Corporation recommends that you establish alternate load hosts for each server. Alternates free the server from dependence on one particular load host because an alternate load host can perform a down-line load if the original load host is unavailable. In addition, alternate load hosts can receive up-line dumps from servers.

Digital advises the network manager to assign the following:

- A minimum of two load hosts for each server
- No more than ten servers per load host

As with the original load host, an alternate VMS load host must have the following characteristics:

- Be running DECnet Phase IV
- Have an Ethernet controller on the same Ethernet as the server
- Have the distribution software installed
- Have DECserver 500 entries in its node database
- Have the latest load file (see Chapter 3)

2.6 Installing onto Single Systems

To install the server distribution software onto an alternate VMS load host that is not a member of a VAXcluster, use one of these methods:

- Place your distribution media on the appropriate device of the new load host and repeat the installation procedure detailed in Section 2.4.
- Follow this procedure:
  - Type the following command on the original load host:

    ```
    $ @VMSINSTAL DS5 device-identifier OPTIONS G SYS$UPDATE: RET
    ```

- Always copy the following savesets to the alternate load host's SYS$UPDATE directory.
  - DS5*nnn*.A
  - DS5*nnn*.B
- Run VMSINSTAL:

```
$ @VMSINSTAL DS5 SYS$UPDATE: RET
```

2.7 Installing onto VAXclusters

To install the server distribution software onto an alternate load host that is a member of a VAXcluster node, install the software onto one cluster member as detailed in Section 2.4. The software is installed onto the common cluster disk. Since the distribution files are in the SYS$COMMON:[DECSERVER] directory, all cluster members have access to them.

2.8 Installing onto Other Operating Systems

To install the DECserver 500 distribution software onto an operating system other than VMS, follow the instructions in the *DECserver 500 Software Installation* manual for that system. You can find the guide for one of the other supported operating systems in the software distribution kit for that operating system. Alternatively, you can order separately any *DECserver 500 Software Installation* manual for another operating system.

2.9 Next Steps

After you exit VMSINSTAL, follow these steps:

1. Check the DECserver 500 release notes to see whether you must install any additional software from the distribution media. If so, install those distribution files.
2. Run the configuration procedure, DSVCONFIG.COM, to configure the load host's node database. See Chapter 3 for information about this procedure.
3. Give the DECserver 500 release notes to the server manager.

3

Configuring the Load Host's Node Database

This chapter shows how to configure a VMS load host's node database for new servers. Configuring this database is part of the software installation. After this procedure, your VMS system is established as a valid load host for the new servers.

To configure the load host's node database for a new server, use the Add option of DSVCONFIG.COM, an automated, menu-driven procedure. If you ran the installation procedure described in Chapter 2, the DSVCONFIG.COM file is now in the SYS$SYSROOT:[DECSERVER] directory for single systems and in the SYS$COMMON:[DECSERVER] directory for members of VAXcluster nodes. Except for the Terminal Server Configurator (TSC) help text library, the load host creates and maintains all server files in this directory.

You configure the load host's node database by adding server entries in the DSVCONFIG.DAT file and the DECnet databases. In addition, you configure the load host's node database by restoring server entries that exist in the DSVCONFIG.DAT file to the DECnet databases.

Note

The DSVCONFIG.COM file, which is part of this distribution software, accommodates the DECserver 100, DECserver 200, Ethernet Terminal Server, and DECserver 500 series terminal servers. In contrast, some previous releases of DSVCONFIG.COM can handle only the DECserver 100, DECserver 200 terminal servers, and Ethernet Terminal Servers; those releases might corrupt existing databases when used with the DECserver 500 series server. Therefore, use only the command file supplied with this software for all configurations.

3.1 Overview of DSVCONFIG

The DSVCONFIG procedure has four configuration options, all of which affect the load host's node database**.** This chapter discusses the options that the software installer needs (List and Add) and that the load host system manager needs (Restore). See the *DECserver 500 Management* manual for a complete description of DSVCONFIG.

3.1.1 Databases Affected by DSVCONFIG

The DSVCONFIG command procedure operates on the load host's node database. This database is comprised of the following three separate databases:

1. Server configuration database

   This database is stored in the file DSVCONFIG.DAT. It has the information you see when you select option 1 (List) from the DSVCONFIG menu.

2. Operational DECnet database

3. Permanent DECnet database

When you run DSVCONFIG, server information is transferred from the server configuration database to the DECnet databases. It is important that these databases remain synchronized.

The DSVCONFIG procedure automatically keeps these databases synchronized. Even though DSVCONFIG includes several NCP commands, do not execute these commands yourself in order to configure the load host's node database because NCP affects only the DECnet databases.

3.1.2 DSVCONFIG Options for the Software Installer

The DSVCONFIG options for new servers enable you to do the following:

- List servers that are currently defined in DSVCONFIG.DAT
- Add an entry for a new server in DSVCONFIG.DAT and in the DECnet databases

  Adding an entry supplies information that identifies the server on the Ethernet and thus establishes this system as a load host for the new server.

- Restore servers that exist in the DSVCONFIG.DAT file to the load host's DECnet operational database and DECnet permanent database

  Restoring servers copies server entries from the server configuration database to the DECnet databases.

- Swap existing servers for new servers and upgrade the server image file when installing new versions of the software.

3.2 Specifying DECnet Characteristics During DSVCONFIG

Several DECnet characteristics apply to servers. DECnet uses these characteristics for down-line loading and up-line dumping. For each new server, you must specify some of the following characteristics; DSVCONFIG supplies the others automatically.

DECnet Characteristic	You Specify	DSVCONFIG Supplies
DECnet node address	X	
DECnet node name	X	
Server type*	X	
Service circuit ID	X	
Ethernet address	X	
Load file		X
Dump file name		X

* "Server type" is actually a DSVCONFIG.DAT characteristic, not a DECnet characteristic.

The server information that you must specify is recorded on each server's *Identification Card*. Ask the hardware installer or the network manager for this card.

3.2.1 DECnet Node Name

Each server unit must have a unique DECnet node name. This name must have from 1 to 6 alphanumeric characters with at least one being a letter. For example, DSV5 and 77LION are valid DECnet node names.

The network manager assigns DECnet node names. During the hardware installation, the hardware installer records the DECnet node name on the *Identification Card* for each server.

3.2.2 DECnet Node Address

Each server has a unique DECnet node address. This number must be a decimal number from 1 to 1023.

If your DECnet network is divided into areas, each DECnet node address takes the form *aa.nnnn*. Here, *aa* is a decimal area number from 1 to 63, *nnnn* is the node address, and the period distinguishes area from address. For example, 17.1003 is a valid node address.

The network manager assigns DECnet node addresses. During the hardware installation, the hardware installer records the DECnet node address on the *Identification Card* for each server.

3.2.3 Ethernet Address

Each server comes with a unique Ethernet hardware address. This address consists of six pairs of hexadecimal digits with a hyphen (-) separating each pair. For example, 08-00-01-00-AB-CD is an address with a valid format.

The Ethernet address is on the front of the server hardware. During the hardware installation, the hardware installer records the Ethernet address on the *Identification Card* for each server.

3.2.4 Server Type

Each server you define is server type DS500 for any DECserver 500 series terminal server.

3.2.5 Load File (Server Image File)

Each DECserver 500 series terminal server has a unique image file named DS5*node-name*.SYS. Here, *node-name* is the DECnet node name of the server. For example, a DECserver 500 terminal server with the DECnet node name TIGER has the image file name DS5TIGER.SYS.

When you use the Add option to define a new server, DSVCONFIG creates the image file by copying the distribution system image, DS5TSV.SYS, to a new file named DS5*node-name*.SYS.

Note that if you add an entry with a DECnet node name that was previously assigned to a now-deleted server, you get a message. It tells you that an image file for a server with that DECnet node name already exists in SYS$SYSROOT:[DECSERVER] directory (for a single system) or in SYS$COMMON:[DECSERVER] directory (for a VAXcluster node). The message asks you whether you want to use this image for the server or whether you want to delete it and use a new image with default parameters.

3.2.6 Server Image File Updates

When you run DSVCONFIG.COM to upgrade with new software or simply to reinstall the existing software, the new server image replaces the existing server image on your host. Thus, any customization that you made to your server image is overwritten by the new server image. The result is a new server image with default parameters.

If you want to maintain your customized server image, consult the server manager. The server manager customized the original image file and can restore the new server image to a customized image. Also, the server manager knows whether the customized values are appropriate for the new server hardware.

To save the commands you used to customize your server image, Digital Equipment Corporation recommends that the server manager create a command file for each server image. This command file, which should reside in the [DECSERVER] directory and can be called *node-name*.COM, contains all the customized TSC commands. See the *DECserver 500 Management* manual for details.

If you don't have an existing command file for each server, such as *node-name*.COM, you can create one by using the TSC command file, TSC$DS5_V20_GET_CHAR.COM, which is supplied with the distribution software. This command file automatically creates a customized TSC command file for your server image. See the *DECserver 500 Management* manual for details.

3.2.7 Dump File Name

Each server has a unique dump file name, DS5*node-name*.DMP. Here, *node-name* is the DECnet node name of the server. For example, a DECserver 500 unit with the DECnet node name TIGER has the dump file name DS5TIGER.DMP.

When you use the Add option to define a new server, DSVCONFIG assigns a name for the dump file. See the *DECserver 500 Problem Solving* manual for information on up-line dumping, the creation of the server's up-line dump file, and how Digital can use this file for problem analysis.

3.2.8 Service Circuit ID

Each server has a service circuit ID, identifying which adapter the load host uses to reach the server when loading and dumping occur.

Service Circuit ID	Ethernet Controller
UNA-*n*	DEUNA (Digital Ethernet UNIBUS Network Adapter)
UNA-*n*	DELUA (Digital Ethernet Large-Scale-Integration UNIBUS Network Adapter)
QNA-*n*	DEQNA (Digital Ethernet Q-bus Network Adapter for DECserver 500)
	DESQA (Digital Ethernet Q-bus Network Adapter for DECserver 510 or 550)
BNA-*n*	BI Ethernet controller (DEBNT or DEBNA).
SVA-*n*	DESVA (Digital Ethernet network adapter for MicroVAX 2000 and VAXstation 2000 systems)

Here, *n* is an integer (typically 0 or 1).

When you run DSVCONFIG to add more than one unit, the procedure asks you to specify the service circuit each time. The first time you are asked, the default is the service circuit for the processor type of your VMS load host. If you respond by specifying a different service circuit, that response becomes the default until you either specify another service circuit or exit the procedure. Note that the circuit must be enabled in order to function.

The following is a partial list of the possible default values for each load host's CPU type. Refer to the *DECserver 500 Software Product Description* (SPD) for a complete listing.

CPU Type	Service Circuit ID
VAX–11/780, 785	UNA–0
VAX–11/730,750	UNA–0
VAX 8600, 8650	UNA–0
VAX 8200, 8300, 8500, 8550, 8700, 8800	UNA–0 or BNA–*n*
MicroVAX II	QNA–0
VAXstation II	QNA–0
MicroVAX 2000	SVA–0
VAXstation 2000	SVA–0

If your CPU supports more than one Ethernet controller, you might choose a service circuit ID number other than zero.

3.3 Preparing to Run the Configuration Procedure

Follow these steps before you begin the configuration procedure:

1. For each new DECserver 500 series unit you define, make sure that there are 350 blocks of free disk space on each load host for creating the software image file. An additional 1300 blocks are required for receiving an up-line dump. Also, for each server running CXM04 line cards, an additional 500 blocks are needed. Note that this space is in addition to the space required for copying the distribution files, as discussed in Section 2.2.
2. Make sure that DECnet is installed and running. For information about the DECnet Phase IV system, see the *VAX/VMS DECnet–VAX System Manager's Guide*.
3. Make sure that all the distribution software was installed in these directories:
   - SYS$SYSROOT:[DECSERVER] for single systems
   - SYS$COMMON:[DECSERVER] for VAXcluster systems

See Appendix A for a list of the distribution files.

4. Ask the hardware installer for the *Identification Card* for each new server. The network manager and the hardware installer recorded the following information on this card, which you need for each new unit before running DSVCONFIG:

   – DECnet node name

   – DECnet node address

   – Ethernet address

   You need this information to answer questions during DSVCONFIG.

   You can check the uniqueness of a name or address with the NCP SHOW NODE command:

   ```
   $ MCR NCP RET
   NCP>SHOW NODE node-name CHARACTERISTICS RET
   ```

   or

   ```
   NCP>SHOW NODE node-number CHARACTERISTICS RET
   ```

   If NCP shows a node as already defined, see the network manager to resolve the conflict.

3.4 DSVCONFIG Conventions and Requirements

The DSVCONFIG procedure is interactive. When you start DSVCONFIG, a menu of options displays. Within the Add option, you get a series of questions. After each question, the default response, if there is one, displays in brackets ([ ]). At the end of each question, either a colon (:) or a question mark (?) appears. The following list tells you how to use DSVCONFIG:

- To select an option, type a menu number and press the RETURN key.
- To answer a question, type your response immediately after the colon or question mark; then press the RETURN key.
- To respond to a question with the default answer, press only the RETURN key.

- To get help about a question, type a question mark (?) after the question. After the help display, the question repeats.
- To exit an option without making any changes, enter CTRL/Z. This returns you to the DSVCONFIG menu.
- To exit DSVCONFIG at the menu level, enter CTRL/Z. This returns you to the DCL prompt.

DSVCONFIG has some additional conventions and requirements:

- When you finish an option, DSVCONFIG automatically returns you to the DSVCONFIG menu.
- At the end of the Add option, you might get NCP messages (information, confirmations, errors). For the meanings of these messages, see the *VAX/VMS System Messages and Recovery Procedures Reference Manual*.
- To run DSVCONFIG on a particular VMS load host, the distribution software must already be installed on that system.

3.5 Running DSVCONFIG

Perform the following procedure to configure the load host's node database. The load host can be a single system or a VAXcluster node.

1. Log in to the system account or any account with OPER and SYSPRV privileges.
2. Enter the following commands:

```
$ SET DEFAULT SYS$COMMON:[DECSERVER] RET
$ @DSVCONFIG RET
```

Note

DSVCONFIG performs its functions in the SYS$COMMON:[DECSERVER] directory, regardless of whether you set the default directory to the SYS$SYSROOT:[DECSERVER] directory or to the SYS$COMMON:[DECSERVER] directory.

DSVCONFIG starts with these actions:

– Determines whether DECnet software is installed. If the software is missing, DSVCONFIG prints a message and exits. You must have DECnet software installed to run this procedure.

– Verifies the existence and format of a data file called DSVCONFIG.DAT. It finds one of three possible situations and continues accordingly:

  - The DSVCONFIG.DAT file does not exist in SYS$SYSROOT:[DECSERVER]. The procedure creates DSVCONFIG.DAT and displays:

    ```
    The database file DSVCONFIG.DAT could not be found, a new one
    will be created for you.
    ```

  - The SYS$SYSROOT:[DECSERVER] directory already has this file but not in the correct format. The procedure reformats the file. (Some older versions of this file do not have a service circuit ID for each server.)

  - The SYS$SYSROOT:[DECSERVER] directory already has this file, and it is formatted correctly. This is the case if DSVCONFIG was previously used to add DECserver 500 entries. The procedure continues with its next task.

Note

On VAXcluster nodes, DSVCONFIG creates and writes files in the common area, the SYS$COMMON:[DECSERVER] directory. See Section 3.7 for special instructions on running DSVCONFIG for the first time on VAXcluster nodes.

– DSVCONFIG informs you that each DECserver unit must have a unique DECnet node name and DECnet node address.

– DSVCONFIG asks you either to continue or to exit:

```
Press <RET> to start, or <CTRL/Z> to exit...
```

Press the RETURN key if you have the information you need for each new server.

3. DSVCONFIG displays the following menu:

```
DECserver Configuration Procedure
                                                Version: n.n

                Menu of Options

        1 - List known DECservers

        2 - Add a DECserver

        3 - Swap an existing DECserver

        4 - Delete an existing DECserver

        5 - Restore existing DECservers

 <CTRL/Z> - Exit from this procedure

Your selection?
```

Type the number that corresponds to the option you want and press the RETURN key.

Note

Options 1, 2, and 5 are described here. Since options 3 and 4 typically require the server manager's intervention, they are described in the *DECserver 500 Management* manual.

3.5.1 List Known DECservers (Option 1)

Select option 1 to list the servers in the DSVCONFIG.DAT data file. Type the number 1 and press the RETURN key. The contents of DSVCONFIG.DAT display in seven columns. Option 1 displays a listing such as this:

```
DECnet  DECnet Server Service
Address Name   Type   Curcuit Ethernet Address  Load File     Dump File

------- ------ ------ ------- ----------------  ------------- ---------

28.100  TUNA   DS200  UNA-0   08-00-2B-02-24-CC PR0801ENG.SYS DS2TUNA.DMP

28.1002 SHRIMP DS200  UNA-0   08-00-2B-04-AA-2B PR0801ENG.SYS DS2SHRIMP.DMP

28.1003 CONCH  DS100  UNA-0   08-00-2B-02-24-DD PS0801ENG.SYS PSDMP24DD.SYS

28.1005 OYSTER DS200  UNA-1   08-00-2B-04-AA-F1 PR0801ENG.SYS DS2OYSTER.DMP

28.1008 TIGER  DS500  UNA-0   08-00-AA-BB-CC-DD DS5TIGER.SYS  DS5TIGER.DMP

28.1011 LYNX   DS500  UNA-0   08-00-BB-CC-DD-EE DS5LYNX.SYS   DS5LYNX.DMP

28.1019 OCELOT DS500  UNA-0   08-00-CC-DD-EE-FF DS5OCELOT.SYS DS5OCELOT.DMP

28.1022 JAGUAR DS500  UNA-0   08-00-23-45-E1-F1 DS5JAGUAR.SYS DS5JAGUAR.DMP

28.1024 FOX    DS100  UNA-0   08-00-DD-14-F1-3F PS0801ENG.SYS PSDMPF13F.SYS

28.1025 BOBCAT ETS    UNA-0   08-00-2D-41-A1-FF BOBCATTSV.SYS BOBCATTSV.DMP

Total of 10 DECservers defined.

(Press RETURN for menu)
```

3.5.2 Add a Server (Option 2)

Select option 2 to add an entry for a new server in the load host's node database. To create an entry, you must supply the following information:

- The server type
- A unique DECnet node name for the server
- A unique DECnet node address for the server
- The Ethernet address of the server
- The service circuit

To add a server, use this procedure:

1. Type the number 2 and press the RETURN key.
2. DSVCONFIG asks:

   ```
   DECserver type?
   ```

   Type DS500 (for all DECserver 500 series terminal servers) and press the RETURN key.
3. DSVCONFIG asks:

   ```
   DECnet node name for unit?
   ```

   Specify the DECnet node name for the new server.
4. DSVCONFIG asks:

   ```
   DECnet node address for unit?
   ```

   Specify the DECnet node address for the new server.
5. DSVCONFIG asks:

   ```
   Ethernet address of unit?
   ```

   Specify the Ethernet address of the new server.
6. If you are adding a server with a DECnet node name that was previously used for a now-deleted server, DSVCONFIG asks whether you want the existing image file (possibly customized for that deleted server) or a new file with default values:

   ```
   File DS5node-name.SYS already exists in the SYS$SYSROOT:[DECSERVER]
   directory

   Do you wish to keep this file [YES]?
   ```

   Note that on VAXcluster nodes, the prompt looks like this:

   ```
   File DS5node-name.SYS already exists in the SYS$COMMON:[DECSERVER]
   directory

   Do you wish to keep this file [YES]?
   ```

   If you want the existing image file (possibly customized), press the RETURN key. On the other hand, if you want the new server's image to have all default parameters or if you are performing an upgrade, type NO and press the RETURN key.

7. DSVCONFIG asks:

   ```
   DECnet Service Circuit-ID [default-id]?
   ```

   Press the RETURN key if the default service circuit is the same as the circuit that connects the load host to the same Ethernet as the server. If not, specify the service circuit ID of the desired Ethernet controller:

   - UNA-*n* (for DEUNA or DELUA)
   - QNA-*n* (for DEQNA or DESQA)
   - BNA-*n* (for DEBNT or DEBNA)
   - SVA-*n* (for DESVA)

   Here, *n* is an integer (typically 0 or 1). See Section 3.2.8 for a discussion of service circuits.

DSVCONFIG adds the entry for the new server to the databases and sets SERVICE ENABLED on the specified service circuit, both of which are necessary for down-line loading.

Note

If you get an error from DECnet while you are adding a server, the entry is added to the DSVCONFIG.DAT file, even though it is not entered in the DECnet databases. To correct this synchronization problem, follow these steps:

1. Use option 4 to delete the entry.
2. Fix the condition causing the DECnet error.
3. Return to option 2 to add the server again.

If you specify a node address that is already defined in DSVCONFIG.DAT, you get a DSVCONFIG error, nothing is added, and the Add option terminates.

3.5.3 Restore Existing Servers (Option 5)

Select option 5 to restore your system's DECnet databases so that they include all the servers in the server configuration database. The Restore option affects both the operational and permanent DECnet databases. It performs NCP SET and DEFINE commands.

If your DECnet network contains a large number of nodes, you might store your DECnet database on a central, remote node and copy this database at each system startup. However, if many servers exist on the network, Digital advises against defining these servers in that central database.

If servers are not defined in the central database, you must restore them whenever you copy your local DECnet database from the central DECnet database. Each time you copy the central DECnet database, use option 5 to restore existing server configurations.

Type the number 5 and press the RETURN key. The following messages confirm the restoration:

```
Restoring existing DECservers to host DECnet database...
Host DECnet database successfully restored.
```

3.6 Restoring with the RESTORE Parameter and from Your Start-Up Procedure

Another way to restore your local DECnet database is to run DSVCONFIG with the RESTORE parameter:

```
$ @DSVCONFIG RESTORE RET
```

Using RESTORE bypasses the menu and lets you include this restoration in your system start-up procedures. If you want to restore servers to the DECnet database at system startup, edit your system start-up file to include these statements in the appropriate place:

```
$ SET DEFAULT SYS$SYSROOT:[DECSERVER]
$ @DSVCONFIG RESTORE
```

Note that the order of events is important. Edit your start-up procedure so that it follows this sequence:

1. DECnet is started.
2. All DECnet node names are defined.
3. Invoke DSVCONFIG.COM.

VAXcluster nodes sometimes require a fourth step. For each node that has a different service circuit ID from the rest of the nodes on the cluster, add another two lines to your start-up procedure:

```
$ SET DEFAULT SYS$COMMON:[DECSERVER]
$ @DSVCONFIG SET_CIRCUIT service-circuit-id
```

See Section 3.2.8 for a list of valid service circuit IDs.

The SET_CIRCUIT parameter is similar to the RESTORE parameter, but SET_CIRCUIT affects only the DECnet operational database. This parameter ensures the correct definitions for service circuit IDs for each node after a cluster reboot. DSVCONFIG RESTORE and DSVCONFIG SET_CIRCUIT also turn on all the specified service circuits. Note that placing either command in your start-up procedures might add time to system startup.

3.7 Configuring on VAXcluster Nodes

For VAXcluster nodes that are load hosts, you must keep each node's databases up to date. You can ensure this in one of two ways.

If you want to establish each cluster node as a load host immediately and make additional configuration changes for servers, run DSVCONFIG at each node and select the appropriate options. Running DSVCONFIG at each node ensures correct service circuit IDs and also ensures that the operational database matches the permanent database.

When you make configuration changes to DSVCONFIG.DAT, you do not have to run the procedure at each node if you can wait for the next reboot of the system before it can act as a load host. At reboot, the start-up procedures can correct all service circuit IDs for each node.

3.8 Running DSVCONFIG for the First Time

Some older versions of DSVCONFIG place DSVCONFIG.DAT in the SYS$SPECIFIC directory, but this data file must be in the SYS$COMMON directory. When you run for the first time the version of DSVCONFIG in your DECserver 500 software distribution kit, follow this procedure to ensure that DSVCONFIG correctly updates the DSVCONFIG.DAT file and automatically places it in the SYS$COMMON directory:

1. From the SYS$COMMON:[DECSERVER] directory, run DSVCONFIG at one node. Issue the following commands:

   ```
   $ SET DEFAULT SYS$COMMON:[DECSERVER] RET
   ```

   ```
   $ @DSVCONFIG RESTORE RET
   ```

2. DSVCONFIG looks for the original DSVCONFIG.DAT in the SYS$SPECIFIC directory.

   If it finds an existing DSVCONFIG.DAT file, DSVCONFIG checks the format. If the format is not correct, DSVCONFIG reformats the data file. Some older versions of this file do not have a service circuit ID for each server.

   Then DSVCONFIG copies the server entries from that data file into the DSVCONFIG.DAT file on the SYS$COMMON:[DECSERVER] directory, ignoring any servers with names already existing in the SYS$COMMON file. The procedure looks at each entry in SYS$SPECIFIC and determines whether that entry already exists in SYS$COMMON. If a server entry already is in SYS$COMMON, that entry is not merged. If the entry is not in SYS$COMMON, it is merged.

   As part of the merge, DSVCONFIG executes the NCP SET command for each server entry in the DSVCONFIG.DAT file in SYS$COMMON. You might see messages during this part of the procedure. They are simply diagnostic messages that you can ignore.

   DSVCONFIG then renames the old DSVCONFIG.DAT file on the SYS$SPECIFIC directory to DSVCONFIG_SPECIFIC.DAT. As a result, you still have the original server entries in case there is a problem and you need to repeat the merge.

3. At every other node, run DSVCONFIG and select the List option. DSVCONFIG merges all the existing server entries to the DSVCONFIG.DAT file in SYS$COMMON.

4. Verify that the merge was successful. At each node, run DSVCONFIG and select the List option. Check the display for the correct service circuit IDs at each node. Since the individual nodes have the correct service circuit ID for each server entry, the correct IDs are merged into the new file. Informational messages display the status of the merge as it progresses.

   If the service circuit IDs are not correct for a particular node, you can correct them in one of two ways:

   - Run DSVCONFIG at the node with the errors, and use the Swap option to change the service circuit IDs.
   - Run DSVCONFIG SET_CIRCUIT at that node.

5. Delete the DSVCONFIG_SPECIFIC.DAT file. This step is optional but a good idea.

Here is an example of the messages DSVCONFIG displays as it merges old server entries:

```
$ @DSVCONFIG RET

Merging SYS$SPECIFIC:[DECSERVER]DSVCONFIG into SYS$COMMON:[DECSERVER]
DSVCONFIG

8 servers were defined in SYS$SPECIFIC:[DECSERVER]DSVCONFIG.DAT

3 servers were already in SYS$COMMON:[DECSERVER]DSVCONFIG.DAT

5 servers merged into SYS$COMMON:[DECSERVER]DSVCONFIG.DAT
```

3.8.1 Double-Checking Directories

If you have used DSVCONFIG.COM in the past to configure DECserver 100 servers, DECserver 200 servers, and Ethernet Terminal Servers, there should not be any server image files in the SYS$SPECIFIC:[DECSERVER] directory on a cluster, only in SYS$COMMON:[DECSERVER]. The same is true for the DECserver 500 version of DSVCONFIG.

However, if there is an image file in the SYS$SPECIFIC:[DECSERVER] directory by mistake, then, during procedures such as down-line loading, VMS reads the image file from the wrong directory, even though the DECnet database says the image is in SYS$COMMON:[DECSERVER].

Check to see whether you have a duplicate version of the server's image file in SYS$SPECIFIC:[DECSERVER]. If so, delete that version.

3.9 Exiting DSVCONFIG

When you exit DSVCONFIG:

1. Give the *Identification Card* for each server that you defined to the server manager.
2. Tell the server manager to store the card in the notebook with the documentation set for the software.

3.10 The Next Step

After you complete the configuration procedure, verify the load host installation. See Chapter 4 for details of this procedure.

4

Verifying the Installation

This chapter explains the procedures for performing two verifications. First, it discusses the verification of the load host installation by down-line loading the newly installed default server image to each new server. Second, it shows how to verify the server as a system by using a few server commands at an interactive terminal connected to the servers.

To complete the software installation, you need to perform two verifications:

1. To verify the installation of the load host, down-line load the uncustomized server image (with all default values) to the new servers, and then read the DECnet event logging messages. These steps confirm the following about the load host:
   - It has the appropriate files in the correct directory.
   - It has a correct entry in its node database for each server.
   - It can successfully down-line load the server image file to servers.
2. To verify the total server installation for each new server, test a few server commands at an interactive terminal connected to one of the server's ports. **Server installation** means the installation of the complete server system — the hardware unit with the correct version of the software loaded and running. This step confirms the following:
   - The correct version of the software is installed on the server.
   - The server hardware operates with the new software.
   - The new software is running successfully.

For alternate load host installations, follow the same procedure to verify the load host installation. However, you need not verify the DECserver 500 system installation of a server that was already verified during the primary load host installation.

4.1 Verifying the Load Host Installation

To verify that you successfully established your VMS system as a load host, use it to perform a down-line load to each new unit.

Even though there are several ways to down-line load server images, use the NCP LOAD NODE command to verify the installation (see Section 4.1.3.2 for details). This is the only method that verifies the installation of the software from a specific load host. To verify the load host installation, be sure that the load host that performs the down-line load is your VMS system. (A discussion of all the ways to down-line load appears in the *DECserver 500 Management* manual.)

After you issue the NCP LOAD command, read the DECnet event logging messages. These messages confirm that the load host you specified performed the down-line load successfully (see Section 4.1.3.3 for details).

You might be down-line loading a new server image either to a new server or to an existing server that is currently operating on the network. Each situation has its own requirements.

4.1.1 Loading a New Server

If a server is new, it has no operating software in it until the initial down-line load of its server image. When the hardware installer powers up a unit, it goes through its diagnostic self-test. If the test is successful, the server then automatically requests a load of its image from any available load host.

The first established load host to respond to the request down-line loads the server image, which might or might not already be customized.

During and after a load, the hardware installer again verifies the hardware installation with diagnostic LED codes on the server. The messages can indicate: whether the server software is being requested, is being loaded, is being started, is running, or has a configuration problem. Coordination with the server hardware installer is important because the complete server installation cannot be tested unless the hardware is fully installed.

4.1.2 Loading an Existing Server

When an operating server is reloaded, all sessions with service nodes are disconnected. Therefore, if an existing server is about to be reloaded, coordination with the server manager is important. Digital recommends that you talk with the server manager and the system manager about the needs of their users. They might recommend that the verification of the installation and the down-line load occur during off hours.

Ask the server manager of an existing server to alert the interactive users on the server of the shutdown due to reloading. The server manager needs at least 30 minutes' notice to disable connections and queuing to local services of the server. The *DECserver 500 Management* manual discusses the issues involved in shutting down the server.

4.1.2.1 Down-Line Loading During Off Hours

The least disruptive time to perform a down-line load is during off hours. If possible, Digital suggests that you load an existing server for verification purposes during off hours.

For routine loading, you can easily down-line load during off hours by putting the LOAD command in a batch job to run at night, or you can use the server's INITIALIZE DELAY command. However, these methods are not recommended for verification because you need to be present for checking the success or failure of the load.

4.1.2.2 Warning Users Before Down-Line Loading

If you decide to reload a running DECserver system during normal working hours, either you (if you know the privileged password) or the server manager can use the privileged BROADCAST ALL server command to warn server users. You can also broadcast the warning by using the server's remote management port. See Appendix B for information about using the Remote Console Facility on a VMS system to access the server's remote management port.

Issue the BROADCAST ALL command at the local mode prompt (Local>). BROADCAST ALL sends a message to all the ports. The message can be up to 73 characters long.

Note that the reception of broadcasts can be disabled on ports even when it is enabled on the server. Some users, therefore, might not receive your message. Digital suggests warning these users by another method, such as electronic mail.

The following command sends the message "The server will be reloaded in 3 minutes" to all the ports.

```
Local> BROADCAST PORT ALL "The server will be reloaded in 3 minutes." RET
```

4.1.3 Down-Line Loading with the NCP LOAD Command

Down-line loading the server image for load host verification involves these steps:

1. Preparing for down-line loading
2. Issuing the NCP LOAD NODE command
3. Reading the event logging messages that report the down-line load

4.1.3.1 Preparing for the NCP LOAD Command

To prepare for down-line loading, follow these steps:

1. Check that DECnet software is running. DECnet software must be turned on before you down-line load.
2. Verify that each server image is in the server configuration database (DSVCONFIG.DAT). Also, check the DECnet node name or DECnet node address of the servers you are about to load. To execute the LOAD command, you need to know one of these node identifiers.

   Run DSVCONFIG (discussed in Chapter 3) and select the List option from the menu. This option displays the load file name, the DECnet node name, and DECnet node address of all the servers you defined in the node database.

3. Identify each server's maintenance password, if there is one:

   – New server

   If you are down-line loading to a new unit that has never before been loaded, there is no password.

   – Existing server

   If you are reloading an existing unit, ask the server manager for the maintenance password.

   If the server manager defined a maintenance password, you probably have to specify it after the keywords SERVICE PASSWORD on the NCP LOAD NODE command line. (This is not necessary if the server manager stores the same password in the DECnet database of the load host, but Digital strongly discourages doing so. The *DECserver 500 Management* manual discusses the server's maintenance password, the DECnet service password, and the relationship between them.)

4. Enable DECnet event logging. Event-logging messages are generated by the VMS system during the different stages of a down-line load. Enter these commands:

   ```
   $ MCR NCP RET
   NCP>SET LOGGING CONSOLE EVENT 0.3 RET
   NCP>SET LOGGING CONSOLE EVENT 0.7 RET
   NCP>SET LOGGING CONSOLE STATE ON RET
   NCP>SET LOGGING MONITOR STATE ON RET
   ```

   Event code 0.3 refers to automatic service events, including down-line loads. Event code 0.7 refers to aborted service events. Event logging is detailed in the *System Messages* volume of the VMS documentation set.

5. If you are reloading an operating server, warn the interactive users with the BROADCAST command. See Section 4.1.2.2 for information on issuing the BROADCAST command.

Note

All the other commands needed for down-line loading, such as the ones that set the Ethernet line and identify the service circuit, are part of DSVCONFIG and are executed when you run that procedure, as discussed in Chapter 3. In addition, SERVICE must be enabled on the service circuit, which DSVCONFIG also performs.

4.1.3.2 Issuing the NCP LOAD Command

Issue the NCP LOAD NODE command at a terminal connected to your VMS load host. On the command line, enter either the DECnet node name or the DECnet node address of the server. Execute the command for each new server. The following examples load an existing DECserver 500 unit named TIGER with a node address of 28.1008 and the maintenance password FF23:

```
$ MCR NCP RET
NCP>LOAD NODE TIGER SERVICE PASSWORD FF23 RET
```

or

```
NCP>LOAD NODE 28.1008 SERVICE PASSWORD FF23 RET
```

To exit from NCP, enter:

```
NCP> EXIT RET
$
```

4.1.3.3 Using DECnet Event Logging

After you execute each NCP LOAD command, read the DECnet event logging messages to confirm that the load was successful. These messages identify your VMS system as the node that generated the event. They are usually displayed on the VMS system console terminal. Also check for any errors reported by NCP.

If no errors are reported, you can assume that the load was successful and that you have finished verification of the load host. See Appendix C for an example of DECnet event logging after a successful down-line load.

If you do see errors in the event logging messages, follow these steps:

1. Check the meaning of the errors in the *VAX/VMS Network Control Program Reference Manual*.
2. Ask the server hardware installer or the server manager to check that the hardware is working satisfactorily. If it is, the problem is probably with the load host.
3. Check your DSVCONFIG.DAT file, especially the Ethernet address you entered when you defined the new server.
4. Check that each server image is in the appropriate directory.
5. Check that DECnet is running.
6. Try the NCP LOAD command again.

If you see no logging events, check that SERVICE is enabled for the DECnet service circuit over which the server software is to be down-line loaded.

Note

When event logging is set up on a DECnet node, you can specify the destination, called the sink, of the messages. Digital suggests that when you first install a server, you set up one DECnet sink node to receive all the logging events associated with down-line loading. In this way, all load request status information is available at one node.

The *DECserver 500 Management* manual has a section on using event logging with down-line loading. Also see the *DECserver 500 Problem Solving* manual for a full discussion of server troubleshooting tools and procedures.

4.2 Verifying the Server Installation

Using a few server commands at an interactive terminal attached to a server port completes your verification of the server installation.

For each new server, follow this sequence:

1. If you are using an IBM 3270 interactive terminal, verify that you are in VT mode and that the communications parameters are set as follows: Character size: 8; Parity: none; Speed: 9600. Refer to the *3270 Terminal Option Use* to set the parameters.

2. Press the RETURN key a few times.

   The following message and prompt displays:

   RET

   RET

   ```
   DECserver 500 Terminal Server Vn.n - LAT Vn.n

   Please type HELP if you need assistance

   Enter username>
   ```

3. Read the identification message to ensure that the correct version of the server image was down-line loaded. If you fail to receive this display, the problem could be one of the following:

   - With the load host
   - With the terminal
   - That the incorrect software was down-line loaded
   - That the software failed to initialize

4. Enter your user name (any string of 1 to 20 characters that identifies you) and press the RETURN key. The port enters local mode, where the local mode prompt (Local>) appears:

   ```
   Enter username> INSTALLER RET

   Local>
   ```

5. Use the TEST PORT command, to verify whether the terminal is receiving valid character data. On the command line, specify the number of lines and the number of columns you want displayed. For example, this command displays 5 lines of 80 characters each:

   ```
   Local> TEST PORT COUNT 5 WIDTH 80 RET
   ```

   You can interrupt this test by pressing the BREAK key. Appendix C shows an example of a TEST PORT display.

6. Enter the SHOW PORT command to display the characteristics of your port and their values:

   ```
   Local> SHOW PORT RET
   ```

   A port characteristics display appears. Appendix C shows an example of a port characteristics display.

7. Use the SHOW SERVICES command to show what services are available to you. The following server command produces a list of services and service announcements:

   ```
   Local> SHOW SERVICES RET
   ```

   Appendix C shows an example of a SHOW SERVICES display.

8. Issue the SHOW DEVICES ALL command to check that all the ports are functioning. The display has a field called "Device Status." A problem exists if any device shows a status of "Failed" or "Wrg Typ." If so, see the hardware installer or the server manager.

   Appendix C shows an example of a SHOW DEVICES display.

9. Select an available service that you are authorized to use. Issue the CONNECT command to verify that the server can logically connect your terminal to that service.

   Note

   At start–up, the server recognizes only Group 0 by default. If you attempt to connect to a service not recognized in Group 0, the server issues a Service Not Known error.

   On the command line, specify the service name to which you want to connect. The following example connects your terminal to a VMS system named TOPCAT:

   ```
   Local> CONNECT TOPCAT RET
   ```

   When the server successfully connects your terminal to the service you specified, you no longer see the local mode prompt; rather, you are now communicating with the service (in this example, the VMS system named TOPCAT).

10. Enter several commands to verify the ability of the server to exchange data with the service. For example, enter the DCL commands SHOW TIME and SHOW USERS.

11. To return to local mode, press the BREAK key or log out from the service.

12. Log out from the terminal, which disconnects the session:

```
Local> LOGOUT RET
```

If the server system verification encounters any problem, see the server manager.

When you complete the preceding steps, you can report the successful load host and server system installations to the server manager.

4.3 The Next Steps

After you complete the installation procedure (see Chapter 2), the configuration procedure (see Chapter 3), and the verification procedure (see Chapter 4), it is time for the server manager to:

1. Customize the server image file for each server if appropriate. The default server characteristics are summarized on the *Terminal Server User's Reference Card*. For information on changing the defaults in the image file, see Chapter 5 of this manual, the *DECserver 500 Management* manual, and the *Terminal Server Commands and Messages* manual.

2. Reload any server if the server manager customized its image.

5

Starting the Terminal Server Configurator (TSC)

This chapter explains how to start the Terminal Server Configurator (TSC) on a VMS system. The *DECserver 500 Management* manual has a complete discussion of TSC, and the *Terminal Server Commands and Messages* manual provides descriptions of TSC commands and error messages. In addition, TSC provides on-line help for all TSC commands.

Usually, the server manager uses TSC. However, since running TSC sometimes requires privileges on the VMS load host, Digital Equipment Corporation suggests that the server manager and the VMS system manager coordinate their efforts.

5.1 Starting TSC

After running VMSINSTAL, as discussed in Chapter 2, the executable TSC program is in the SYS$COMMON:[DECSERVER] directory on single VMS systems. On VAXcluster systems, TSC is in the SYS$COMMON:[DECSERVER] directory after the software installer runs DSVCONFIG on the individual cluster nodes (refer to Chapter 3).

On either a single system or a cluster node, it is a good idea to set the default directory to SYS$COMMON:[DECSERVER] before you start TSC. However, whether you set the default directory to SYS$SYSROOT:[DECSERVER] or to SYS$COMMON:[DECSERVER], TSC modifies the server image on SYS$COMMON:[DECSERVER].

To run TSC, follow these steps:

1. Log in to the system account. Running TSC from this account ensures that you have the appropriate privileges to have write-access to the DECserver 500 image that you are about to open.
2. Set the default directory:

   ```
   $ SET DEFAULT SYS$COMMON:[DECSERVER] RET
   ```

3. Execute TSC as follows:

   ```
   $ RUN DS5CFG.EXE RET
   ```

   Note that you can execute TSC with a shortcut if you choose. Follow these steps:

   – Add this line to your log-in command file to establish "TSC" as a DCL command that starts TSC:

     ```
     TSC :== RUN SYS$COMMON:[DECSERVER]DS5CFG.EXE
     ```

   – Enter:

     ```
     $ TSC RET
     ```

4. TSC displays:

   ```
   Terminal Server Configurator - V3.0
   Copyrigth (c) Digital Equipment Corporation.  1989.  All Rights Re-
   served.

   Server image:
   ```

   Type the name of the server image file. Each server image file name has the format DS5*node-name*.SYS.

   Here, *node-name* is the DECnet node name of the server. For example, a DECserver 500 unit with the DECnet node name TIGER has the image file name DS5TIGER.SYS. When you type the image name, you can omit .SYS. For example:

   ```
   Server image: DS5TIGER RET
   ```

5. TSC opens the file and displays information similar to this:

```
DECserver 500, V2.00.00 (Database V9).
Server image last changed on 6-Nov-1989 at 16:28:50 on TOPCAT
TSC>
```

6. Issue DEFINE, LIST, and PURGE commands at the TSC> prompt to customize the server image as appropriate.

7. Exit TSC. There are two ways to exit: either type the EXIT command and press RET , or enter CTRL/Z :

```
TSC> EXIT RET
$
```

or

```
TSC> CTRL/Z
$
```

5.2 TSC Topics

The following is a list of TSC topics that can be found in the *DECserver 500 Management* manual:

- Opening image files
- Entering TSC commands
- Using TSC on-line help
- Executing TSC commands from a command file. Digital suggests that instead of customizing the server image command-by-command, you create a command file with all the TSC DEFINE commands you want to execute, and then run the command file.
- Returning values in the server's image file to the original default. Describes how to run the TSC command file called DS5_*nnn*_DEFAULTS.COM.

A

DECserver 500 VMS Distribution Files

For VMS kits, these are the DECserver 500 distribution files:

File Name	Description
DS5TSV.SYS	DECserver 500 software image (with all default values).
KITINSTAL.COM	Command file that VMSINSTAL uses to do part of the installation procedure.
DSVCONFIG.COM	Configuration procedure for managing server entries in three databases of the load host.
DS5CFG.EXE	Terminal Server Configurator (TSC) to DECserver 500 image files.
DS5CFG.HLB	TSC on-line help.
DS5$IVP.COM	Installation Verification Procedure: verifies that the DECSERVER directory exists, that all files from the distirbution software are in the directory, and that the release notes are in the SYS$HELP directory.
DS5_*nnn*_DEFAULTS.COM	TSC command file that restores all characteristics to the original defaults. (*nnn*=version number. For example, DS5_020_DEFAULTS.COM is the defaults file for DECserver 500 V2.0.)

File Name	Description
DS5*nnn*.RELEASE_NOTES	DECserver 500 release notes. (*nnn*=version number. For example, DS5020.RELEASE_NOTES is the release notes file for DECserver 500 V2.0.)
TSC$DS5_V*nn*_GET_CHAR.COM	TSC command file that automatically creates a customized TSC command file for your server image. (*nnn*=version number. For example, TSC$DS5_V20_GET_CHAR.COM is the file for DECserver 500 V2.0.)

The following TSM port set-up command files, which are stored in the [DECSERV-ER] directory, provide an easy way to set up common port configurations, such as a dial-in modem or a printer port. Each command file resets all port characteristics to factory-shipped default values and then configures a port for a particular application. Because the setup is a general configuration, you may have to customize the files to meet your specific needs (such as enabling authorized groups for a particular port). For more information about these command set-up files, refer to Appendix D of the *Guide to Terminal Server Manager*.

File Name	Description
TSM$DS5_V*nn*_ADD_LOCAL_SERVICE.COM	Adds a local service to a designated server/port.
TSM$DS5_V*nn*_CTS_RTS_PRINTER.COM	Sets up a printer with CTS/RTS flow control.
TSM$DS5_V*nn*_DEDIC_SERV_PRINTER.COM	Sets up a printer with a dedicated service.
TSM$DS5_V*nn*_DEDIC_SERV_TERM.COM	Sets up a terminal using a dedicated service.

File Name	Description
TSM$DS5_V*nn*_DIAL_IN_MODEM.COM	Sets up a port for attachment of a dial-in modem.
TSM$DS5_V*nn*_DIAL_IN_OUT_MODEM.COM	Sets up a dynamic access port for attachment of a dial-in/dial-out modem.
TSM$DS5_V*nn*_DIAL_OUT_MODEM.COM	Sets up a port for attachment of a dial-out modem.
TSM$DS5_V*nn*_DSR_DTR_TERM.COM	Sets up a printer with DSR/DTR flow control.
TSM$DS5_V*nn*_GET_CHAR.COM	Creates a command file that can be used to customize a server image.
TSM$DS5_V*nn*_HOST_INIT_PRINTER.COM	Sets up a printer and service for it.
TSM$DS5_V*nn*_NON_LAT_HOST.COM	Sets up a non-LAT host.
TSM$DS5_V*nn*_PC_TERM_OR_SERV.COM	Sets up a personal computer used as a terminal and a service.
TSM$DS5_V*nn*_PORT_DEFAULT.COM	Resets port characteristics to the factory-shipped values. Each of the other files in this list runs this file first as a prerequisite to setting port characteristics that affect the particular application.
TSM$DS5_V*nn*_TER_SWITCH.COM	Sets up a port for use as a terminal switch.

B

Using the Remote Console Facility

The server supports the VMS Remote Console Facility (RCF). This appendix briefly explains how to use RCF from a VMS host. If you need to issue the BROADCAST command yourself to warn users of an upcoming down-line load, you might want to use RCF if you do not have access to a terminal connected to that server.

To run RCF from a load host, use the NCP CONNECT NODE command. On the command line, specify either the DECnet node name or DECnet node address of the server. This example shows a connection to a server named TIGER with DECnet node address 28.1008:

```
$ MCR NCP RET
NCP>CONNECT NODE TIGER RET
Console connected (press CTRL/D when finished)
```

or

```
NCP>CONNECT NODE 28.1008 RET
Console connected (press CTRL/D when finished)
```

If the server has a maintenance password, specify it with the NCP CONNECT command. Include the SERVICE PASSWORD keywords on your command line and type the password. The following example shows a connection to server TIGER with maintenance password FF23:

```
NCP>CONNECT NODE TIGER SERVICE PASSWORD FF23 RET
Console connected (press CTRL/D when finished)
```

or

```
NCP>CONNECT NODE 28.1008 SERVICE PASSWORD FF23 RET
Console connected (press CTRL/D when finished)
```

You can also use the NCP CONNECT command with the server's Ethernet address. You might want to do this if you are not on a load host. The following example shows a connection from a VMS system with the service circuit ID UNA–0 to a server with the Ethernet address 08-00-2B-04-AA-2B:

```
NCP>CONNECT VIA UNA-0 PHYSICAL ADD 08-00-2B-04-AA-2B RET
```

or

```
NCP>CONNECT VIA UNA-0 PHYSICAL ADD 08-00-2B-04-AA-2B PASSWORD FF23 RET
```

Press the RETURN key to activate the server:

```
Console connected (press CTRL/D when finished) RET
```

You see the server's # prompt if the log–in password is enabled for port 0. Otherwise, you see the standard prompt (Enter username>).

To exit from RCF, enter the following:

```
Local> CTRL/D
NCP>
```

To exit from NCP, enter the following command:

```
NCP>EXIT RET
$
```

See the *DECserver 500 Management* manual for detailed information on RCF.

C

Examples: Installation, Configuration, Verification

This appendix shows examples of the installation and the configuration procedure. It also illustrates verification of a load host installation by down-line loading and reading DECnet event logging messages. Finally, it shows verification of a server system installation by testing server commands.

C.1 Example of an Installation

The following example illustrates a successful installation onto a single VMS V5.0 system. This example assumes the following:

- You are logged in to the system manager account with the appropriate privileges.
- The distribution medium is a type that requires only one volume, such as a magnetic tape. For types that require more than one volume, extra prompts during the procedure instruct you to mount the additional volumes.
- The disk drive is named MTA2.
- The default print queue is SYS$PRINT.
- The data file DSVCONFIG.DAT already exists.

This installation example shows the procedure as Digital Equipment Corporation suggests you run it.

8. Use the command line with the key words OPTIONS N. These keywords provide the option to print the DECserver 500 release notes.
9. Print the DECserver 500 release notes.
10. Stop the procedure to read them.
11. Rerun the procedure.

```
$ SET DEFAULT SYS$UPDATE RET

$ @VMSINSTAL DS5 MTA2: OPTIONS N RET

VAX/VMS Software Product Installation Procedure V5.0

It is 27-JUN-1989 at 14:08.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]? Y RET
* Are you satisfied with the backup of your system disk [YES]? RET
Please mount the first volume of the set on MTA2:.
* Are you ready? Y RET
%MOUNT-I-MOUNTED, DS5        mounted on MTA2:

The following products will be processed:

  DS5 V2.0

       Beginning installation of DS5 V2.0 at 14:08

%VMSINSTAL-I-RESTORE, Restoring product saveset A...

Release Notes Options:

        1.  Display Release Notes
        2.  Print Release Notes
        3.  Both 1 and 2
        4.  Copy Release Notes to SYS$HELP
        5.  Do not display, print, Or copy Release Notes

* Select option [3]: 2 RET
* Queue name [SYS$PRINT]: RET
Job DS5020.RELEASE NOTES (queue SYS$PRINT, entry 314) started on SYS$PRINT
* Do you want to continue the installation [N]? RET

      VMSINSTAL procedure done at 14:09

$
```

Read the DECserver 500 release notes. Then run VMSINSTAL again.

```
$ @VMSINSTAL DS5 MTA2: RET

           VAX/VMS Software Product Installation Procedure V5.0

It is 27-JUN-1989 at 14:25.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]? Y RET
* Are you satisfied with the backup of your system disk [YES]? RET
Please mount the first volume of the set on MTA2:.
* Are you ready? Y RET
%MOUNT-I-MOUNTED, DS5        mounted on MTA2:

The following products will be processed:

  DS5 V2.0

       Beginning installation of DS5 V2.0 at 14:25

%VMSINSTAL-I-RESTORE, Restoring product saveset A...
%VMSINSTAL-I-RELMOVED, The product's release notes have been
successfully moved to SYS$HELP.
*Do you want to run the IVP after the installation [YES]? RET

     No more questions will be asked during the installation.

%VMSINSTAL-I-RESTORE, Restoring product saveset B...


Your installation is now complete.  After exiting from VMSINSTAL:

1.  Refer to the DECserver 500 V2.0 release notes to see if you now
    have to install any additional software from the distribution media.

2.  Execute a command procedure called DSVCONFIG.COM, which the
    installation procedure just copied to the SYS$ROOT:[DECSERVER]
    directory.

    For every new server choose option 2, ADD A DECSERVER, to define
    the server in your VMS system's node database.

    For every existing server, choose option 3, SWAP AN EXISTING DECSERVER,
    to update the servers' software, then run the configurator,
    SYS$ROOT:[DECSERVER]DS5CFG.EXE to reconfigure your images.

3.  Verify the installation, as described in the DECserver 500 Software
    Installation Guide (VMS/MicroVMS).

4.  If you have Terminal Server Manager (TSM) software, register the
    terminal server in the TSM management directory.

If you are installing more than one terminal server, first complete the
installation of all of them, and then register them in the TSM management
directory.  Refer to the guidelines for registering terminal servers in the
Guide to Terminal Server Manager.

5.  Inform the server manager that the installation is complete.
```

```
6.  The Installation Verification Procedure (IVP) for the DECserver 500
    can be found in SYS$TEST and may be run at any time by executing
    the command procedure DS5$IVP.COM.

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directo-
ries...

Beginning installation verification procedure for DECserver 500 V2.0

Successful creation of SYS$SYSROOT:[DECSERVER] directory

Successful installation of SYS$SYSROOT:[DECSERVER]DS5TSV.SYS

Successful installation of SYS$SYSROOT:[DECSERVER]DSVCONFIG.COM

Successful installation of SYS$SYSROOT:[DECSERVER]DS5CFG.EXE

Successful installation of SYS$HELP:[SYSHLP]DS5CFG.HLB

Successful installation of SYS$SYSROOT:[DECSERVER]DS5_020_DEFAULTS.COM

Successful installation of SYS$SYSROOT:[SYSHLP]DS5020.RELEASE_NOTES

Successful installation of SYS$SYSROOT:[DECSERVER]TSC$DS5_V20_GET_CHAR.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_ADD_LOCAL_SERVICE.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_CTS_RTS_PRINTER.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DEDIC_SERV_PRINT.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DEDIC_SERV_TERM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DIAL_IN_MODEM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DIAL_IN_OUT_MODEM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DIAL_OUT_MODEM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_DSR_DTR_TERM.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_GET_CHAR.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_HOST_INIT_PRINT.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_NON_LAT_HOST.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_PC_TERM_OR_SERV.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_PORT_DEFAULT.COM

Successful installation of SYS$SYSROOT:[DECSERVER]TSM$DS5_V20_TERM_SWITCH.COM

Installation verification procedure for DECserver 500 V2.0 successful.

Installation of DS5 V2.0 completed at 14:28

VMSINSTAL procedure done at 14:28

$
```

NOTE

The TSM files that display in the listing here are only accessible if you have TSM installed.

C.2 Starting DSVCONFIG.COM

This example, shown in five parts, illustrates the DSVCONFIG.COM options for the following tasks:

- Listing server entries
- Adding server entries in the load host's node database
- Swapping an old server for a new server
- Deleting a server from the database
- Restoring server entries to the DECnet databases

With the exception of the List option, each option ends by automatically returning you to the menu.

This example assumes that you are running the procedure from a cluster, that you are logged in to the system account with appropriate privileges, and that the latest version of DSVCONFIG.COM was run, thereby ensuring that the DSVCONFIG.DAT file exists in the correct format.

```
$ SET DEFAULT SYS$COMMON:[DECSERVER] RET

$ @DSVCONFIG RET

You must assign a unique DECnet node name and DECnet node address for each
new DECserver.

Press <RET> to start, or <CTRL/Z> to exit... RET
```

```
                DECserver Configuration Procedure
                                                    Version: n.n

                        Menu of Options

                1 - List known DECservers

                2 - Add a DECserver

                3 - Swap an existing DECserver

                4 - Delete an existing DECserver

                5 - Restore existing DECservers

           <CTRL/Z> - Exit from this procedure

       Your selection?
```

C.2.1 Listing DECserver Entries (Option 1)

```
Your selection?  1 RET

DECnet  DECnet Server Service
Address Name   Type   Circuit Ethernet Address  Load File     Dump File
------- ------ ------ ------- ----------------  ---------     ---------

28.1001 TUNA   DS200  UNA-0   08-00-2B-02-24-CC PR0801ENG.SYS DS2TUNA.DMP

28.1002 SHRIMP DS200  UNA-0   08-00-2B-04-AA-2B PR0801ENG.SYS DS2SHRIMP.DMP

28.1003 CONCH  DS100  UNA-0   08-00-2B-02-24-DD PS0801ENG.SYS PSDMP2DD.SYS

28.1005 OYSTER DS200  UNA-1   08-00-2B-04-AA-F1 PR0801ENG.SYS DS2OYSTER.DMP

28.1008 TIGER  DS500  UNA-0   08-00-AA-BB-CC-DD DS5TIGER.SYS  DS5TIGER.DMP

28.1011 LYNX   DS500  UNA-0   08-00-BB-CC-DD-EE DS5LYNX.SYS   DS5LYNX.DMP

28.1019 OCELOT DS500  UNA-0   08-00-CC-DD-EE-FF DS5OCELOT.SYS DS5OCELOT.DMP

28.1022 JAGUAR DS500  UNA-0   08-00-23-45-E1-F1 DS5JAGUAR.SYS DS5JAGUAR.DMP

Total of 8 DECservers defined.

(Press RETURN for menu)
```

C.2.2 Adding a DECserver Unit (Option 2)

This example adds a new DECserver 500 terminal server named CHETAH to the load host's node database.

```
        Your selection? 2 RET

Type a ? at any time for help on a question.

Type CTRL/Z for any question to return to menu without adding the unit.

DECserver type? DS500 RET

DECnet node name for unit? CHETAH RET

DECnet node address for unit? 28.1023 RET

Ethernet address of unit? 08-00-2B-66-44-F4 RET

DECnet Service Circuit-ID [UNA-0]? RET

If you get an error message now, the new unit won't be added, and you
should delete it from the directory.
```

If you use the List option to display all servers, you see that CHETAH appears among the entries:

```
DECnet  DECnet Server Service
Address Name   Type   Circuit Ethernet Address  Load File     Dump File
------- ------ ------ ------- ----------------  ---------     ---------
28.1001 TUNA   DS200  UNA-0   08-00-2B-02-24-CC PR0801ENG.SYS DS2TUNA.DMP
28.1002 SHRIMP DS200  UNA-0   08-00-2B-04-AA-2B PR0801ENG.SYS DS2SHRIMP.DMP
28.1003 CONCH  DS100  UNA-0   08-00-2B-02-24-DD PS0801ENG.SYS PSDMP24DD.SYS
28.1005 OYSTER DS200  UNA-1   08-00-2B-04-AA-F1 PR0801ENG.SYS DS2OYSTER.DMP
28.1008 TIGER  DS500  UNA-0   08-00-AA-BB-CC-DD DS5TIGER.SYS  DS5TIGER.DMP
28.1011 LYNX   DS500  UNA-0   08-00-BB-CC-DD-EE DS5LYNX.SYS   DS5LYNX.DMP
28.1019 OCELOT DS500  UNA-0   08-00-CC-DD-EE-FF DS5OCELOT.SYS DS5OCELOT.DMP
28.1022 JAGUAR DS500  UNA-0   08-00-23-45-E1-F1 DS5JAGUAR.SYS DS5JAGUAR.DMP
28.1023 CHETAH DS500  UNA-0   08-00-2B-66-44-F4 DS5CHETAH.SYS DS5CHETAH.DMP

Total of 9 DECservers defined.

(Press RETURN for menu)
```

C.2.3 Swapping an Old Terminal Server for a New Terminal Server (Option 3)

In this example, an existing DECserver 100 terminal server named MOZART is swapped for a new DECserver 500 series terminal server, which is given the same DECnet node name. The DECnet node address always stays the same with Swap. The new server also has the same service circuit ID as the old server. (If you use Swap to change the characteristics of the same server, you have to specify the Ethernet address even though it will not change.)

```
        Your selection? 3 RET

Type a ? at any time for help on a question.
Type CTRL/Z for any question to return to the menu without changing the
unit.

What is the DECnet node name you want to swap?  MOZART RET
DECserver at Ethernet address 08-00-2B-02-24-DD is being modified.

Enter the new Ethernet address, and any other DECnet
characteristics you want to modify.

DECserver type [DS100]  DS500 RET
DECnet node name for unit [MOZART]?  RET
Ethernet address of unit? 08-00-2B-03-AA-AB RET
DECnet Service Circuit-ID [UNA-0] RET
```

C.2.4 Upgrading DECserver 500 Software to Version 2.0 (Option 3)

This example assumes that the server manager has already installed the new version of software (using VMSINSTAL) and has already created a server image command using the @TSC$DS5_V20_GET_CHAR.COM file described in Chapter 6 of the *DECserver 500 Management* manual. In this example, the server manger has created a file called BETH_SETUP.COM and is swapping V1.1 server image named DSBETH.SYS for a new, upgraded server image, which is given the same DECnet node name. In this case, server information stays the same.

```
        Your selection? 3 RET

Type a ? at any time for help on a question.
Type CTRL/Z for any question to return to the menu without changing the
unit.

What is the DECnet node name you want to swap?  BETH RET
DECserver at Ethernet address 08-00-2B-02-20-AD is being modified.

Enter the new Ethernet address, and any other DECnet
characteristics you want to modify.

DECserver type [DS500]  DS500 RET
DECnet node name for unit [BETH]?  RET
Ethernet address of unit? 08-00-2B-02-20-AD RET
File DS5BETH.SYS already exisits in the SYS$COMMON:[DECSERVER] directory
Do you wish to keep this file [YES]?  NO RET
DECnet Service Circuit-ID [UNA-0] RET
```

DSVCONFIG.COM copies the DS5TSV.SYS default server image file to DS5BETH.SYS. When DSVCONFIG.COM completes, the server manager runs TSC on the server image to make any changes or additions for the server.

C.2.5 Deleting a DECserver from the Database (Option 4)

This example shows the deletion from the load host's node database of the exisiting server with DECnet node name WALDEN.

```
        Your selection? 4 RET

(Press CTRL/Z to return to menu.)
Enter the DECnet node name of the server you want to delete?  WALDEN RET
%NCP-I-NMLRSP, listener response - Success
Remote node = 28.1001 (WALDEN)
%NCP-I-REDDELET, Database entry deleted
```

If you use the List option to get a listing of servers, you see that WALDEN no longer appears.

C.2.6 Restoring Existing DECserver Units (Option 5)

This example shows the restoration of servers to the load host's DECnet databases.

```
Your selection?  5 RET

Restoring existing DECservers to host DECnet database...
Host DECnet database successfully restored.
```

C.3 Example of Verification: Verifying a Load Host Installation

The following example, presented in six parts, shows the installation verification for a VMS load host. This procedure tests whether your VMS system can perform successfully as a down-line load host.

In this example, the VMS system is named TOPCAT. The server that is loaded is a DECnet node named TIGER.

TIGER is an existing server, currently operating on the network. This example assumes that the down-line load is performed during normal working hours and that server users are warned about the upcoming down-line load by way of RCF.

C.3.1 Using RCF and Warning Server Users

This example uses the server's default log-in password ACCESS and default privileged password SYSTEM. The example assumes that the server's log-in password is enabled (the default is disabled, in which case the # prompt does not appear).

```
$ MCR NCP CONNECT NODE TIGER SERVICE PASSWORD FF23 RET
Console connected (press CTRL/D when finished) RET
# ACCESS RET (not echoed)
DECserver 500 Terminal Server V2.0 - LAT V5.1
Please type HELP if you need assistance
Enter username> INSTALLER RET
Local> SET PRIVILEGED RET
Password> SYSTEM RET (not echoed)
Local> BROADCAST ALL "THE SERVER WILL BE RELOADED IN 7 MINUTES." RET
Local> CTRL/D
$
```

C.3.2 Enabling DECnet Event Logging

```
$ MCR NCP RET
NCP>SET LOGGING CONSOLE EVENT 0.3 RET
NCP>SET LOGGING CONSOLE EVENT 0.7 RET
NCP>SET LOGGING CONSOLE STATE ON RET
NCP>SET LOGGING MONITOR STATE ON RET
NCP>EXIT RET
$
```

C.3.3 Checking Server Names

```
$ SET DEFAULT SYS$COMMON:[DECSERVER] RET

$ @DSVCONFIG RET

You must assign a unique DECnet node name and DECnet node address for each
DECserver.

Press <RET> to start, or <CTRL/Z> to exit... RET
```

DECserver Configuration Procedure

Version: ***n.n***

```
                    Menu of Options

                1 - List known DECservers

                2 - Add a DECserver

                3 - Swap an existing DECserver

                4 - Delete an existing DECserver

                5 - Restore existing DECservers

            <CTRL/Z> - Exit from this procedure

Your selection?  1 RET

DECnet  DECnet Server Service
Address Name   Type   Circuit Ethernet Address  Load File     Dump File

------- ------ ------ ------- ----------------  ---------     ---------

28.1001 TUNA   DS200  UNA-0   08-00-2B-02-24-CC PR0801ENG.SYS DS2TUNA.DMP

28.1002 SHRIMP DS200  UNA-0   08-00-2B-04-AA-2B PR0801ENG.SYS DS2SHRIMP.DMP

28.1003 CONCH  DS100  UNA-0   08-00-2B-02-24-DD PS0801ENG.SYS PSDMP24DD.SYS

28.1005 OYSTER DS200  UNA-1   08-00-2B-04-AA-F1 PR0801ENG.SYS DS2OYSTER.DMP

28.1008 TIGER  DS500  UNA-0   08-00-AA-BB-CC-DD DS5TIGER.SYS  DS5TIGER.DMP

28.1019 OCELOT DS500  UNA-0   08-00-CC-DD-EE-FF DS5OCELOT.SYS DS5OCELOT.DMP

28.1022 JAGUAR DS500  UNA-0   06-22-BB-33-AA-44 DS5JAGUAR.SYS DS5JAGUAR.DMP

28.1023 CHETAH DS500  UNA-0   08-00-2B-66-44-F4 DS5CHETAH.SYS DS5CHETAH.DMP

Total of 8 DECservers defined.

(Press RETURN for menu) RET
```

```
        DECserver Configuration Procedure
                                                Version: n.n

                        Menu of Options

                    1 - List known DECservers

                    2 - Add a DECserver

                    3 - Swap an existing DECserver

                    4 - Delete an existing DECserver

                    5 - Restore existing DECservers

                <CTRL/Z> - Exit from this procedure

Your selection?  CTRL/Z

$
```

C.3.4 Down-Line Loading with the LOAD Command

To down-line load the image, you can use the LOAD command as follows:

```
$ MCR NCP LOAD NODE TIGER PASSWORD FF23 RET
```

C.3.5 DECnet Event Logging Display After Issuing LOAD

The following information displays after you issue the LOAD command:

```
DECnet event 0.3, automatic line service
From node 28.900 (TOPCAT), 18-JUN-1989 01:35:20.47
Circuit UNA-0, Load, Requested, Node = 28.1008 (TIGER)
File = DS5TIGER.SYS, Operating system,
Ethernet address = 08-00-AA-BB-CC-DD

DECnet event 0.3, automatic line service
From node 28.900 (TOPCAT), 18-JUN-1989 01:43:21.14
Circuit UNA-0, Load, Successful, Node = 28.1008 (TIGER)
File = DS5TIGER.SYS, Operating system,
Ethernet address = 08-00-AA-BB-CC-DD
```

C.3.6 Checking the Service Circuit

This optional section is presented in case the service circuit becomes disabled. Type the following command to verify that the service circuit, BNA–0, is enabled:

```
NCP>SHOW CIR BNA-0 CHARACTERISTICS RET

Circuit Volatile Characterisitics as of 27-Jun-89 08:23:45

Circuit = BNA-0

State                     =on
Service                   =enabled
Designated router         = 4.378 (LKGRT3)
Cost                      =4
Router priority           =64
Hello timer               =15
Type                      =Ethernet
Adjacent node             = 4.378 (LKGRT3)
Listen timer              =90
```

If the state is disabled, first check that the system is not busy by entering the following command:

```
NCP>SHOW KNOWN LINKS RET

Known Link Volatile Summary as of 27-Jun-89 08:25:23

   Link     Node            PID    Process     Remote Link  Remote User

  33848  2.119 (DSSDEV)  24203120  MCGREGOR          34655  MAIL
  8615   3.264 (RITA)    2420372C  POOR                309  CTERM
  34154  4.10  (SMAUG)   24203F2B  MAIL_34154        33388  DECNET_MAIL
NCP>
```

The example shows that there are three users. If you enable the circuit at this time, you will disable the current users. If the circuit is not busy, enter the following commands to enable service circuit, BNA–0.

```
NCP>SET CIR BNA-0 STATE OFF RET
NCP>DEFINE CIR BNA-0 SERVICE ENABLED RET
NCP>DEFINE CIR BNA-0 ALL RET
```

Digital recommends that you put these commands in a command file. This will set the characteristics faster and will not interrupt the circuits.

C.3.7 Conclusion of a Load Host Installation Verification

This example assumes that you want to turn off event logging.

```
NCP>CLEAR LOGGING CONSOLE EVENT 0.3 RET

NCP>CLEAR LOGGING CONSOLE EVENT 0.7 RET

NCP>EXIT RET

$
```

C.4 Example of Verification: Verifying the Server Installation

The following example illustrates verification of a server installation. This procedure uses some server commands that test the hardware, the correctness of the software version, and the ability of the new software to run successfully.

It assumes that:

1. The manager has not made changes to the server characteristics with TSC.
2. You are at a terminal connected to the server's port 3.
3. Your user name is INSTALLER.
4. Your user password is BIGCAT.
5. You are testing the server by connecting to your own VMS system, TOPCAT.
6. The chosen server name is TIGER.

```
RET

RET

DECserver 500 Terminal Server Vn.n - LAT Vn.n

Please type HELP if you need assistance

Enter username> INSTALLER RET

Local> TEST PORT COUNT 5 WIDTH 65 RET

 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`a
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`ab
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`abc
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`abcd
```

The following display assumes that the image down-line loaded to TIGER, a new server, was not customized with TSC. The display at the port of a new server matches this example with the original default values except for the port number and user name:

```
Local> SHOW PORT RET

Port 3: INSTALLER                Server:            TIGER

Character Size:          8       Input Speed:        9600
Flow control:          XON       Output Speed:       9600
Parity:               None       Modem Control:  Disabled

Access:              Local       Local Switch:       None
Backward Switch:      None       Name:             LC-1-3
Break:               Local       Session Limit:         4
Forward Switch:       None       Type:               SOFT

Preferred Service:    None

Authorized Groups:    0
(Current)  Groups:    0

Enabled Characteristics:

Autobaud, Autoprompt, Broadcast, Lock, Loss Notification, Message Codes
Verification

Local> SHOW SERVICES ALL SUMMARY RET

Service Name        Status         Identification

DEVELOP           2 Available      Hardware Timesharing Service Ident
DOCUMENT            Available      Documentation Timesharing
TEST              Unavailable      As usual
TOPCAT              Available      VMS 8600
```

```
Local> SHOW DEVICES ALL RET

Device  Device Port     Device    CSR          Vector   Total
Name    Type   List     Status    Address      Address  Errors    Slot


CONSOLE  DL        0    Running   177560          60        0      1

NETWORK  DEQNA          Running   174440         120        0      2

LC1      CXA16  1-16    Running   160440         310        0      3
LC2      CXA16  17-32   Running   160460         320        0      4
LC3      CXA16  33-48   Running   160500         330        0      5
LC4      CXA16  49-64   Running   160520         340        0      6
LC5      CXA16  65-80   Running   160540         350        0      7
LC6      CXA16  81-96   Running   160560         360        0      8
LC7      CXY08  97-104  Wrg Typ   160600         370        0      9
LC8      CXY08  113-120 Running   160620         400        0     10
LC9      CXA16          Standby   160640         410        0     11
LC10     CXA16          Standby   160660         420        0     12
```

NOTE

The display for the DECserver 510 lists only LC1 and LC2 as running.

```
Local> CONNECT TOPCAT RET

Local -010- Session 1 to TOPCAT established

TOPCAT -- VAX 8600, The Best for Down-line Loading

Username: INSTALLER RET

Password: BIGCAT RET   (not echoed)

    Welcome to VAX/VMS version Vn.n on node TOPCAT
Last interactive login on Wednesday, 27-JUN-1989 07:25
Last non-interactive login on Thursday, 27-MAR-1989 17:18

SYS$MANAGER:NOTICE.TXT -- TOPCAT System Notices

18-Jun-1989  All users, please purge your files!

$ SHOW TIME RET

18-JUN-1989 07:00:09
```

```
$ SHOW USERS RET

          VAX/VMS Interactive Users
          18-JUN-1989 07:00:13.13
   Total number of interactive users =   5
Username       Process Name  PID              Terminal
DAISY          DAISY         20A0257A         VTA3341         LTA3341:
HEATHER        HEATHER       20A02217         VTA3391         LTA3391:
INSTALLER      INSTALLER     20A02001         VTA3477         LTA3511:
IVY            IVY           20A020D2         VTA3234         Disconnected
ROSE           ROSE          20A02321         VTA3471         LTA3471:
$ LOGOUT RET
INSTALLER    logged out at 18-JUN-1989 07:00:20.98
Local -011- Session 1 disconnected from TOPCAT
Local> LOGOUT RET
```

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