DIGITAL NetRider

DECserver Network Access Software Installation

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Contents

Preface

1 Introduction

2 Windows 95 and Windows NT Installation

3 OpenVMS Installation

4 DIGITAL UNIX Installation

5 ULTRIX Installation

6 UNIX Installation

A Distribution Files

B Cabling and Hardware

C Upgrading Access Server Software

Preface

Overview

Purpose

This guide describes how to install the DECserver Network Access Software on a system that runs the Windows 95, Windows NT, OpenVMS, DIGITAL UNIX, ULTRIX, or UNIX operating system. It describes:

- Installing DECserver Network Access Software distribution software onto the appropriate system.

- Configuring the system so that it can operate as a load host for the DECserver Network Access Software.

- Verifying the installation by downloading the software to the network access server and testing a number of representative access server commands.

Intended Audience

The audience for this guide is the system or network manager responsible for making network access server products available on their Ethernet(s). The system manager is responsible for the system that is to be established as a load host. The network manager is responsible for the local area network (LAN). Readers should be familiar with both Internet network management concepts and the load host's operating system.

Conventions

This guide uses the following conventions:

- The generic term access server instead of using the specific hardware product name.

- All numbers are decimal unless otherwise noted.

- All Ethernet addresses are hexadecimal.

- The examples in the OpenVMS, DIGITAL UNIX, and ULTRIX chapters reference the DECserver 700 unit.

- The examples in the UNIX chapter reference the DECserver 90TL unit.

Typographical Conventions

In addition, this guide uses the following typographical conventions:

Convention	Description
special type	This special type indicates system output or user input.
bold	All commands, file names, and directories are in bold type.
lowercase	If a command appears in lowercase letters in a command format or an example, you must enter it in lowercase letters.
italic	Italic type in command syntax or examples indicates variables for which either you or the system supplies a value.
Ctrl/X	Hold down the Control key and simultaneously press the key specified by *X*. The access server displays this key combination as *^X*.
#	The pound sign (#) is the DIGITAL UNIX, UNIX, and ULTRIX superuser prompt.

Associated Documents

The following documents are available:

- *Network Access Server Management*

- *Network Access Server Command Reference*

- Access Server Manager online help

How to Order Additional Documentation

To order additional documentation, use the following information:

To Order:	Contact:
By Telephone	USA (except Alaska, New Hampshire, and Hawaii): 1-800-DIGITAL (1-800-344-4825) Alaska, New Hampshire, and Hawaii: 1-603-884-6660 Canada: 1-800-267-6215
Electronically (USA only)	Dial 1-800-DEC-DEMO (For assistance, call 1-800-DIGITAL)
By Mail (USA and Puerto Rico)	DIGITAL EQUIPMENT CORPORATION P.O. Box CS2008 Nashua, New Hampshire 03061 (Place prepaid orders from Puerto Rico with the local DIGITAL subsidiary: 809-754-7575)
By Mail (Canada)	DIGITAL EQUIPMENT of CANADA LTD. 940 Belfast Road Ottawa, Ontario, Canada K1G 4C2 Attn.: A&SG Business Manager
Internationally	DIGITAL EQUIPMENT CORPORATION Attn.: A&SG Business Manager c/o local DIGITAL subsidiary or approved distributor
Internally	U.S. Software Supply Business (SSB) DIGITAL EQUIPMENT CORPORATION 8 Cotton Road Nashua, New Hampshire 03063

Correspondence

Documentation Comments

If you have comments or suggestions about this document, send them to the DIGITAL documentation organization.

Attn.:	Documentation Project Manager
FAX:	(508) 486-5655
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Online Services

To locate product-specific information, refer to the following online services:

BBS

To read the Bulletin Board System, set your modem to 8 bits, no parity, 1 stop bit, and dial 508-486-5777 (U.S.). Outside of the U.S., dial (access code) 1-508-486-5777.

WWW

The Digital Equipment Corporation Network Products Business Home Page on the World Wide Web is located at the following addresses:

North America:	http://www.networks.digital.com
Europe:	http://www.networks.europe.digital.com
Australia:	http://www.digital.com.au/networks

Chapter 1

Introduction

Overview

In This Chapter

This chapter describes the components in your Network Access Server product kit. The following are the topics in this chapter:

- Product Components List

- Component Descriptions

Product Components List

Introduction

Your Network Access Server product kits contain:

- Hardware components consisting of:

    — DECserver 90, 700, or 900 series

    — DECserver user documentation

- DECserver Network Access Software (DNAS) CD consisting of:

    — DECserver Network Access Software (DNAS)

    — DECserver Network Access Software (DNAS) support files

    — Access Server Manager, the DECserver management tool

    — DIGITAL Remote Access Security (DRAS) software

- Network Product Information Library CD that contains documentation for the following:

    — DECserver Network Access Software (DNAS) software (including installation instructions)

    — DIGITAL Remote Access Security (DRAS) software (including installation instructions)

Component Descriptions

Hardware Components

The DECserver unit is a network access server that you can use to connect asynchronous devices (terminals, printers, modems, and PCs) to an Ethernet local area network (LAN). You can also use your DECserver unit with a modem for remote access connections. Remote access allows remote PC, Macintosh, and workstation users to dial into a remote network access server and use all of a network's available resources.

Hardware Installation

Follow the instructions in the DECserver user documentation and the documentation that shipped with the network device that you are connecting to the DECserver.

DECserver Network Access Software (DNAS) CD

The DECserver Network Access Software CD contains the software you need to download the operational software to the access server and to configure the hardware. The PC-based kit includes the Access Server Loader and the Access Server Manager. These are PC-based, Graphical User Interface loading and management tools.

The DNAS CD also includes the Digital Remote Access Security (DRAS) software. The DRAS software allows you to install and configure a RADIUS server for remote access authentication and authorization.

Software Installation

If you have a PC available, install the software on the DNAS CD on your PC and configure the Access Server Loader so it can download the DNAS software to your access server. If you do not have a PC, use an OpenVMS, UNIX, DIGITAL UNIX, or ULTRIX system as a load host to download the software. Use the DECserver console commands to configure the unit. Refer to the *Network Access Server Command Reference* guide or the online help for more information about the console commands.

Network Product Information Library CD

The Network Product Library CD contains the documentation you need to install and configure the DECserver management software.

Documentation Installation

Follow the instructions in the CD booklet to install the documentation viewer. After installing the viewer, you can read any of the available documentation online. To find the DNAS documentation, open the DECserver Network Access Server collection. To find the DRAS documentation, open the Digital Remote Access Security collection.

You can access the Access Server Manager documentation by installing the application, invoking it, and clicking the Help button.

Chapter 2

Windows 95 and Windows NT Installation

Overview

In This Chapter

This chapter describes the procedures necessary to install the access server management software on a Windows 95 or Windows NT management station and configure the access server for remote access. The topics in this chapter are:

- Introduction

- Installation Requirements

- Step 1: Installing Management Software

- Step 2: Configuring the Access Server Loader

- Step 3: Installing the Access Server and Network Device

- Step 4: Configuring the Access Server for Remote Access

- Step 5: Preparing for Client Installation

Introduction

Access Server Configuration

The 32-bit windows-based kit includes tools that allow you to download the DNAS software and configure the hardware. The following table describes when to use the Access Server Loader and the Access Server Manager software:

Use the Access Server Loader Software to:	Use the Access Server Manager Software to:
Install the Digital Network Access Software on access servers.	Configure your DECserver unit for remote access.
Set Internet addresses and subnet masks for access servers.	Reboot an access server and set IP characteristics.

Installation and Configuration Process

To install and configure a remote access server, you need to:

Step	Action
1	Install the software on the DECserver Network Access Software CD on a PC that runs the Windows NT or Windows 95 operating system. This is the PC management station.
2	Configure the Access Server Loader.
	The Access Server Loader is a BOOTP server that allows you to download the DNAS software from the PC management station to the access server. Keep the Access Server Loader running continuously to ensure that the DNAS image downloads when an access server requires it.
3	Install the access server and network devices.
4	Configure the access server.
	See the DNAS documentation and your network device documentation for details about configuration tasks. You can find the documentation in the DECserver Network Access Software collection on the Network Product Information Library CD.
5	Collect and distribute information for remote access client installation. Typically, the remote user installs the client software.

Other Configuration Tasks

For all other configuration tasks, use the DNAS console commands. Refer to the DNAS documentation located in the DECserver Network Access Software collection on the Network Product Information Library CD.

Installation Requirements

PC Management Station Hardware Requirements

The PC management station is the PC you use to manage the access server. It requires the following hardware to support the PC-based management applications:

- A 386 or greater processor, or an Alpha processor.

- A minimum of 16 megabytes of random access memory (RAM). Additional memory improves performance.

- A CD-ROM drive.

- A minimum of 5 megabytes of available disk space.

- A network interface card (NIC).

- A network cable connected to the PC.

PC Management Station Software Requirements

You need Microsoft Windows 95 or Windows NT Version 3.51 or greater to install the 32-bit Windows-based management software.

Step 1: Installing Management Software

Introduction

Use this step to install the software from the DECserver Network Access Software CD on your PC management station. After you complete this step, you can:

- Configure the Access Server Loader and activate the BOOTP server.

- Use the Access Server Manager to configure and manage an access server for remote access.

Load Hosts on Other Machines

If you plan to use a different type of load host to download the DNAS software to your access server (for example, OpenVMS, ULTRIX, UNIX, or DIGITAL UNIX load hosts), see the appropriate installation chapter in this guide.

Installing the DECserver Network Access Software

To install the DECserver Network Access Server software, do the following:

Step	Action
1	Insert the DNAS CD in your CD-ROM drive. The CD automatically mounts as an ISO 9660 volume.

Step 1: Installing Management Software

Step	Action
2	Are you using the Windows NT operating system? • If no, go to step 3. • If yes, do the following: **a)** **For Intel systems only:** From the Program Manager or Start menu, run the following: `X:\WIN95NT\SETUP.EXE` The letter *X* represents the drive letter of your CD-ROM drive. This launches the Access Server Setup program. **a)** **For Alpha systems only:** From the Windows Explorer, click the Fx!32 folder and then double click instlx86.exe. From the instlx86 installation dialog, run the following: `X:\WIN95NT\SETUP.EXE` The letter *X* represents the drive letter of your CD-ROM drive. This launches the instlx86 Setup program. **b)** Click Next in the Welcome dialog box. **c)** Go to step 4.
3	Are you using the Windows 95 operating system? • If no, go to step 2. • If yes, do the following: **a)** Select Start and choose Control Panel from the Settings menu. **b)** Select Add/Remove Programs from the Control Panel. **c)** Click Install in the Add/Remove Programs Properties dialog box. **d)** Click Next in the Install Program From Floppy Disk or CD-ROM dialog box. **e)** Enter the letter of your CD-ROM drive followed by /SETUP in the Run Installation Program dialog box and click Finish. **f)** This launches the Setup Program. Click Next in the Welcome dialog box. **g)** Go to step 4.
4	Select the components you want to install from the Select Components dialog box and click Next. The default is to install all components.

Step	Action
5	Are you installing the Access Server Loader?
	• If no, go to the step 6.
	• If yes, do the following:
	a) Choose the target drive and directory in the Choose Destination Location dialog. Click Next to accept the displayed default or click Browse and enter a new destination and click Next.
	b) If running Windows NT, enter the name of the Program Folder where you want the icons installed, or click Next to accept the displayed default.
6	Are you installing the Access Server Manager?
	• If no, go to step 7.
	• If yes, do the following:
	a) Choose the target drive and directory in the Choose Destination Location dialog. Click Next to accept the displayed default or click Browse, enter a new destination, and click Next.
	b) Choose the target drive and directory for the data and backup files. Click Next to accept the displayed defaults or click Browse, enter a new destination, and click Next.
	c) If running Windows NT, enter the name of the Program Folder where you want the icons installed, or click Next to accept the displayed default.
	d) Click Yes to open the README.TXT file when prompted to do so.
7	When the installation procedure displays the Installation Complete dialog box, click OK.
	Restarting Windows: If files that the installation procedure needs to update are in use, the procedure displays the Restart Windows dialog box instead of the Installation Complete dialog box. Select the restart option and click OK.

Step 2: Configuring the Access Server Loader

Introduction

Use this step to configure the Access Server Loader and activate the BOOTP server. After you complete this step, you can use the Access Server Loader to:

- Load the Digital Network Access Software (DNAS) image on your access server.

- Configure IP characteristics on an access server.

Before You Start

Before beginning this procedure, make sure you have:

- An Internet address for the access server

- The subnet mask for the access server

- The Ethernet address for the access server

Procedure

To configure the Access Server Loader, do the following:

Step	Action
1	Start the Access Server Loader on the PC management station. To learn about all of the Access Server Loader options, click Help on any of the application windows.
2	Select Setup. If a database file does not exist, the application asks if you want to create it. Click Yes.
3	Select the Clients tab and enter the following information for the access server: • Host name for the access server • Ethernet address • Internet address • Subnet mask • Gateway Internet address • Image file name for the access server. The default image for the DECserver 90M access server is MNENG2; WWENG2 is the default image for all other DECserver models. Click OK when finished.

Step	Action
4	Select the Files tab and enter the Request and Response file names. The Request File field contains the name of the file you expect to get from the access server in a BOOTP request. The Response File field contains the name of the factory load image you want to load on the access server using TFTP.
	Disabling Other Load Hosts: If other access server load hosts exist, you may want to disable them or load the new factory image on the other BOOTP loaders. This ensures that the access server receives the new factory image (WWENG2 or MNENG2) during a load operation.
5	Select the Options tab and check that the displayed PC management station's host name and IP address are correct.
6	Select the Logging tab and select any of the logging options. (This step is optional.)
7	Click on OK to close the Clients, Files, Options, or Logging dialog box and return to the Access Server Loader main window.
8	Start the BOOTP and TFTP servers by clicking on the server On/Off buttons. If you want the Access Server Loader to start automatically when you start Windows, copy the Access Server Loader icon into the Windows StartUp group.
	Result: Once activated, the Access Server Loader waits for access servers to send BOOTP and TFTP requests to it. When the Access Server Loader receives requests, it downloads the DNAS image file to the access server.

Step 3: Installing the Access Server and Network Device

Introduction

Use this step to:

- Download a new DECserver Network Access Server (DNAS) image to the access server.

- Configure IP characteristics on your access server.

Completing this step sets your access server configuration back to factory defaults. Your current access server configuration is lost.

DECserver Configuration Upgrade

If you want to upgrade your DECserver Network Access Software and preserve your current access server configuration, refer to Appendix C.

Flash RAM Upgrades

If your access server has Flash RAM and the Flash RAM contains the image MNENG2 or WWENG2, use the procedure in Appendix D to load the new DNAS image. To permanently save the new DNAS image into Flash RAM, you must use the procedure defined in Appendix C.

Procedure

To install the access server and network device, do the following:

Step	Action
1	Install the access server hardware. (Refer to the DECserver user documentation.)
2	Connect the Ethernet cable to the Ethernet connector on the access server.
3	Install the network device on the desired access server port using the appropriate cable. (Refer to the table in Step 4: Configuring the Access Server for Remote Access in this topic or the documentation that shipped with the device.)
4	Are you installing a modem? • If no, go to step 5. • If yes, and you did not preconfigure the modem for dial-in operations, reset it to factory defaults.

Step	Action
5	Turn on the power to the network device. If the access server is new from the factory, turn on the power to it. Otherwise, factory-initialize the access server. Once loaded, the BOOTP requester in the access server activates and the BOOTP responder installed on the Access Server Loader or other load host responds with the Internet address for the access server. **Initialization Time:** See your DECserver user documentation for the time required for initialization. The initialization sequence for a DECserver 90M with Flash RAM takes approximately 10 minutes.

Step 4: Configuring the Access Server for Remote Access

Introduction

Use this step to configure your access server for remote access. To configure the access server, you can do one (or both) of the following:

- Use the Access Server Manager to configure your access server and modems for remote access. The following sections describe how to configure an access server for remote access using this application.

- Use the access server console commands to configure your access server as a terminal server or for remote access use.

After you complete this step, you can use your dial-up clients to make remote connections to the network.

For More Information

If using the Access Server Manager, see the application's How To... online help topics for step-by-step instructions for each step in the configuration process.

If using the access server command line interface, see the *Network Access Server Management* book in the collection on the Network Product Information Library CD.

Before You Start

You need the following information:

- Access server type (DECserver 90M, 700-08, 700-16, 900TM, 900GM, 900GMx, and 900MC).

- Internet address currently assigned to the access server.

- For IPX, unique internal network number (optional).

- For IP remote client dial-in, unique Internet address for each port (optional).

- Modem manual for each modem that you want to configure. In some cases, the Access Server Manager prompts you to enter some modem commands to properly initialize the modem.

- New login and privilege passwords, if ports use login passwords for security (optional).

- If a port is to use Kerberos security, realm and domain name or Internet address of the Kerberos server.

- If a port is to use RADIUS security, realm, client secret, and domain name or Internet address of the RADIUS authentication and accounting servers.

Step 4: Configuring the Access Server for Remote Access

- If a port is to use SecurID security, realm, encryption type, and domain name or Internet address of the SecurID ACE/server.

- Telnet enabled on the access server.

A: Start the Configuration Process

See the Access Server Manager's How To... online help topics to read step-by-step instructions for all of the configuration procedures. The application leads you through the configuration process by displaying the appropriate dialog boxes where you enter the required information.

The first step in the configuration process is to add your access server to the Browser. Do the following:

Step	Action
1	Start the Access Server Manager on the PC management station.
2	Add the access server to the Browser. This step opens a new configuration data file for the access server.
3	Verify the access server's remote console connection using the Test Connection option on the Utilities tab.
4	Save the access server's Internet address and subnet mask in NVRAM (nonvolatile random access memory) using the Configuration tab. Click Apply to write your settings to the access server. See the online help for step-by-step instructions.

B: Configure Protocols

The next step is configuring the access server protocols. To configure the protocols:

Step	Action
1	Select Server Protocol IP and click Configure.
2	Configure the access server's Internet gateway address using the Gateway tab. Click Apply to execute the commands on the access server.
3	Configure the access server's Domain Name System using the DNS tab. Click Apply to execute the commands on the access server.

Step	Action
4	Configure other server protocols by selecting the appropriate server protocol option (Server IP, Server IPX, or Server AppleTalk). Depending on the protocol you select, you may need to select tabs to configure all protocol properties.
5	Click Apply to apply the server protocol settings on the access server.

C: Configure Ports

After configuring the access server protocols, configure the port properties. Do the following:

Step	Action
1	Configure the port that has the modem attached for PPP dial-up service by selecting the Port Dial-Up Service option. The application prompts you to specify modem data and network protocols for the port (IP, IPX, or AppleTalk).
	Initially, configure the port without security or dial-back properties. You configure these properties *after* you configure the port protocols.
	Use Your Modem Manual: If you add a modem that does not appear in the list of DIGITAL-tested modems that the Access Server Manager displays, use your modem manual to find the modem commands required to configure the modem.
2	Click Apply to write the port settings to the access server.
3	Test the PPP dial-up service on the port you just configured by using a remote dial-up client, such as Microsoft's Windows 95 Dial-Up Networking.
4	Were you able to successfully connect to the access server?
	• If yes, go to the next step in the configuration process, D: Configure Dial-Back Services.
	• If no, refer to your modem manual and check that the modem commands are correct. Check that you configured the correct server protocols. Refer to the *Network Access Server Problem Solving* book for more details.

D: Configure Dial-Back Services

Dial-back services enable the access server to terminate a user's session and dial the user with a specified telephone number. If you want to provide dial-back services to your users, do the following:

Step	Action
1	Configure dial-back services by selecting the Port Dialer Service option and enabling dial-back on a port configured for PPP dial-up service.
2	Click Write to apply the dial-back settings on the access server.
3	Test your dial-back configuration by using your dial-up client to make a network connection.
4	Did the access server respond properly to the remote access attempt? • If yes, go to the next step in the configuration process, E: Configure Security. • If no, see the Access Server Manager's online help or the DNAS documentation for information about configuring dial-back services.

E: Configure Security

The next step is configuring security for the access server. If you configure security settings on the access server, you may also need to have the appropriate security server on the network. Your security methods include:

- PAP or CHAP with the access server's login password (no network security server required)

- PAP with the access server's local user accounts (no network security server required)

- PAP or CHAP with RADIUS security

- PAP with Kerberos V4 security

- PAP with SecurID security

The Access Server Manager's online help provides step-by-step instructions for configuring security. If you do not want to use any of these security methods, go to the next step.

Step 4: Configuring the Access Server for Remote Access

To configure security on your access server:

Step	Action
1	Select the Port Dial-Up service option, enable port security, and select a security method.
2	Click Apply to apply the port security commands.
3	Configure security properties by selecting the Server Security option, selecting the type of security you want to configure, and entering the required information. **References:** Refer to the online help and the *Network Access Server Management* book for more details about configuring security on the access server.
4	Click Apply to apply the security settings on the access server.
5	Test your security configuration by using your dial-up client to make a network connection. If using a remote server for authentication, make sure you install and configure the security server before you perform this test. Do the following: **a)** Log in using incorrect security information. If the access server rejects the access request, the test is successful. Go to the next test. **b)** Log in using correct security information. If the access server accepts the access request, the test is successful. Go to the next step.
6	Did the access server respond properly to the remote access attempts? • If yes, go to the next step in the configuration process, F: Save the Configuration File. • If no, reconfigure the security settings and check that your security server is properly installed, configured, and active.

F: Save the Configuration File

To save all of the configuration settings, select Save from the File menu.

Step 5: Preparing for Client Installation

Introduction

Use this step to prepare for client installation. If you are not configuring your access server for remote access, you can skip this step.

- If you plan to use the Windows 95 or Windows NT Dial-Up Networking client, see the Dial-Up Networking for Users Quick Start cards or your Windows 95 or Windows NT documentation.

- If you plan to use a client other than the Windows 95 or Windows NT clients, refer to the documentation that shipped with it.

Information You Will Need

As the network administrator, you need to provide each user with one or more of the following:

- Remote access dial-up client. The DNAS software is compatible with most standard remote access clients, including the Windows 95 Dial-Up Networking client and the Windows NT dial-up client software.

- Access server's telephone number for dial-in.

- Port authentication login user name and password consistent with the method used during the access server configuration.

- Type of modem to specify during the installation.

- IRQ and I/O port settings for the modem.

- Type of LAN operating system to select.

- PPP IP address for port dial-in (optional).

- PC's IP address (optional).

- IP name server address and local domain name (optional).

Client Information

For additional information, refer to the client documentation.

Chapter 3

OpenVMS Installation

Overview

In This Chapter

This chapter describes how to install the DECserver Network Access Software on an OpenVMS system. This system is referred to as the load host.

This chapter contains the following topics:

- Preparing to Install the Software

- Installing the Software

- Updating the DECserver Database

- Downloading the Software Image

- Verifying the Image Download

- Completing the Installation

- Installing Software on Additional OpenVMS Hosts

Preparing to Install the Software

Procedure

Before you install the software on your load host, do the following:

Step	Action
1	If you have a new DECserver with Flash RAM, follow the procedure to update the DECserver database. (See the Updating the DECserver Database section in this chapter.)
2	Check your load host for the following: **a)** OpenVMS V5.0 or any subsequent release is installed. **b)** DECnet VAX Phase IV or DECnet/OSI is running. **c)** The Ethernet controller is on the same Ethernet as the DECserver.
3	Make sure that the CMKRNL and SYSPRV privileges are set. For DECnet/OSI systems, make sure you have WORLD privilege and the NET$MANAGE rights identifier.
4	Verify that the load host has enough available disk space. (Refer to the release notes for memory requirements.)
5	Back up the system before installing the software.
6	Unless you are installing from save sets copied from another load host, mount the software media on an appropriate device drive.
7	Write down the access server DECnet node address and DECnet node name (Phase IV only), which the network manager supplies. Write down the Ethernet hardware address, which the hardware installer supplies.
8	Make sure the access servers have a minimum of 4 megabytes (MB) of physical memory.

Installation Time Required

Installation requires approximately 5 minutes to complete.

LMF Not Required

License Management Facility (LMF) is not required.

Installing the Software

Introduction

To install the DECserver Network Access Software on the load host, use the VMSINSTAL utility. To stop the installation at any time, press Ctrl/Y.

Step 1: Start VMSINSTAL

Do the following:

Step	Action
1	Log in to the system manager account.
2	Mount the CD-ROM drive as a Files-11 volume using the following command syntax: $ **MOUNT *device-id* DNAS** The *device-id* variable is the name of the CD-ROM drive on your system.

3	Invoke VMSINSTAL using the following command syntax:
	
	$ **@SYS$UPDATE:VMSINSTAL DNAS*nnn* -**
	
	_$*device-id:*[DNAS022] OPTIONS N
	
	where *nnn* is the software version, for example, DNAS022. Substitute your device drive identifier for *device-id*.
	
	The procedure displays the following:
	
	`OpenVMS VAX Software Product Installation Procedure Vx.x`
	`It is 9-MAY-1997 at 17:05.`
	`Enter a question mark (?) at any time for help.`

4	If there are any active processes, VMSINSTAL lists them and asks if you want to continue. Enter YES to continue the installation.
	
	Example:
	
	`%VMSINSTAL-W-ACTIVE, The following processes are still active:`
	`          SERVER_006C`
	`          DECW$SERVER_0`
	`          DECW$TE_00EB`
	`          DECW$TE_00F2`
	`* Do you want to continue anyway [NO]? `**YES**

Step 2: Confirm System Backup and Device Mount

If you have backed up your system disk, press the Return key when the procedure prompts you to do so. If you mounted the software media on the appropriate device, enter YES.

Example

```
* Are you satisfied with the backup of your system disk [YES]?
Please mount the first volume of the set on DDCU:
* Are you ready? YES
%MOUNT-I-MOUNTED, DNASxx mounted on _SYSTEM$DDCU:
```

Step 3: Print the Release Notes

To print the release notes, choose option 2 (recommended). Press the Return key to print the release notes on the default printer or specify another print queue.

Example

```
The following products will be processed:
DNAS Vx.x

        Beginning installation of DNAS Vx.x at 17:06
%VMSINSTAL-I-RESTORE, Restoring product save set A ...
Release notes included with this kit are always copied to
SYS$HELP.
Additional Release Notes Options:
        1.  Display release notes
        2.  Print release notes
        3.  Both 1 and 2
        4.  None of the above
* Select option [2]:
* Queue name [SYS$PRINT]:
Job DNASxx (queue SYS$PRINT, entry 880) pending
* Do you want to continue the installation [NO]? YES
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved
to SYS$HELP.
(c) Copyright 1988, 1997, Digital Equipment Corporation - All
rights reserved.
```

Step 4: Install Kit Components

The procedure asks which components of the installation kit you want to install.

If	Then
You are installing a load host for a DECserver 700 or DECserver 900, or updating a previously installed version of the NA7 kit	Enter YES when the procedure asks if you want to install Network Access Software DS700/900 images.
You are installing a load host for a DECserver 90, or updating a previously installed version of the NA9 kit	Enter YES when the procedure asks if you want to install Network Access Software DS90 images.
You want to install support and informational files to help manage DECservers and your load host more easily	Enter YES when the procedure asks if you want to install Network Access Software common support files. Enter NO if you plan to use your system only to downline load DECservers and want to save disk space.

Example

```
You will now be asked if you wish to install certain components
of this kit. These components used to be available under the
product kit names NA7xxx and NA9xxx. If you need help
understanding which of these components to install, entering a
question mark ("?") in response to any one of these questions
will display additional information on the contents of that
component.
*Do you want to install the Network Access Software DS700/900
images [YES]?


*Do you want to install the Network Access Software DS90 images
[YES]?


*Do you want to install the Network Access Software common
support files [YES]?
```

Step 5: Purge Files

The procedure asks if you want to purge files. Enter YES to purge the files replaced by this installation.

Example

```
* Do you want to purge files replaced by this installation [YES]?
YES
```

Step 6: Run the IVP

The system asks if you want to run the Installation Verification Procedure (IVP). To run the IVP, which is recommended, press the Return key when prompted to do so.

The IVP verifies that the DECSERVER directory exists and all the files from the distribution kit are in the DECSERVER directory. After the procedure runs the IVP, VMSINSTAL is completed. See the Updating the DECserver Database section in this chapter.

Example

The IVP command procedure described in this example is for informational purposes. You do not need to run it again at this time.

```
* Do you want to run the IVP after the installation [YES]?
%DNAS-I-RELAX, No further questions will be asked
%VMSINSTAL-I-RESTORE, Restoring product save set B ...
%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-RESTORE, Restoring product save set D ...
%VMSINSTAL-I-SYSDIR, This product creates system directory
[DECSERVER].

    If you intend to execute this layered product on other nodes
    in your VAXcluster, and you have the appropriate software
    license, you must prepare the system-specific roots on the
    other nodes by issuing the following command on each node
    (using a suitably privileged account):

        $ CREATE /DIRECTORY SYS$SPECIFIC:[DECSERVER]
```

System Display

The procedure continues and displays the following message. (If you do not receive this message, no modifications to the system startup file are necessary.)

```
Your installation is now complete. After exiting from VMSINSTAL:
1. Add the following command to your system startup file,
SYS$STARTUP:SYSTARTUP_VMS.COM:

$@SYS$STARTUP:DSV$STARTUP
```

This procedure includes the SYS$SYSROOT:[DECSERVER] directory
specification in all the MOM$LOAD or MOP$LOAD logical name search
list, and loads all access server information into the volatile
MOP database.

If you have other directories of MOP load images or dump files,
be sure to place the customized DEFINE/SYSTEM commands for
MOM$LOAD, MOP$LOAD, and/or MOP$DUMP ahead of the execution of
DSV$STARTUP.COM in the system startup file.

2. Configure the server into your host's database.

Execute the command procedure called DSV$CONFIGURE.COM. This
command procedure is in the SYS$COMMON:[DECSERVER] directory. If
you have already executed this procedure from previous
installations, you only need to configure additional units.
All previously defined units will still be configured.

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

VMSINSTAL-I-MOVEFILES, Files will now be moved to their target
directories...

(c) Copyright Digital Equipment Corporation 1988, 1997 All rights
reserved.
        Installation Verification Procedure for
Digital Network Access Software for OpenVMS VX.X

Verifying Network Access Software images for DECserver 700s and
900s ....

Verifying Network Access Software images for DECserver 90s ....

Verifying Network Access Software common support files ....

        Installation Verification Procedure succeeded.
$

Updating the DECserver Database

Introduction

If you are using the optional Terminal Server Manager (TSM) software, do not use the DSV$CONFIGURE procedure. Instead refer to the *Terminal Server Manager Installation and Use* manual for instructions about configuring the load host.

DSV$CONFIGURE enables you to:

- Maintain system information about access servers.

- Modify the local MOP (Maintenance Operations Protocol) client configuration.

- Connect to the access server using the remote console port.

DSV$CONFIGURE supports both DECnet Phase IV and DECnet/OSI. DSV$CONFIGURE also supports data created by the procedure DSVCONFIG. When you install the current version of the DECserver Network Access Software, DSV$CONFIGURE automatically converts any DSVCONFIG data to the format of the current version.

Command Information

For more information about DSV$CONFIGURE commands, refer to the *Network Access Server Management* guide.

Executing DSV$CONFIGURE

Enter the following command to start DSV$CONFIGURE:

```
$ @SYS$COMMON:[DECSERVER]DSV$CONFIGURE
```

Defining a Symbol

You may find it useful to define a symbol for this procedure in your LOGIN.COM file as follows:

```
$ DSV == "@SYS$COMMON:[DECSERVER]DSV$CONFIGURE"
```

Example

If you define the symbol DSV, the following example shows how to start the procedure. This example also shows how to use HELP to display a list of DSV$CONFIGURE commands.

```
$ DSV
% DSV-I-IDENT, executing DSV$CONFIGURE version X.X.X-nnn
-DSV-I-HELP, type ? any time for help


DSV> HELP
        ADD       - Add a server to the system
        MODIFY    - Modify an existing server's information
        SET       - Synonym for MODIFY
        DELETE    - Remove a comm. server from the system
        LIST      - Display information on one or all servers
        SHOW      - Synonym for LIST
        CONNECT   - Connect to a server via remote console
        USE       - Synonym for CONNECT
        HELP      - Displays summary of valid commands
        EXIT      - Exit this procedure
```

Adding New Access Servers

Do the following:

Step	Action
1	Enter one of the following commands:
	• $ **@SYS$COMMON:[DECSERVER]DSV$CONFIGURE**
	• $ **DSV**
	The system displays the following:
	```%DSV-I-IDENT, executing DSV$CONFIGURE version X.X.X-nnn -DSV-I-HELP, type ? any time for help```
2	Enter the ADD command using the following syntax:
	DSV> **ADD [SERVER] [*server-name*]**
	After you enter the ADD command, DSV$CONFIGURE displays a series of prompts. Some prompts display with defaults specified in square brackets. The values of the defaults are based on the running system.

Step	Action
3	DSV$CONFIGURE determines the load host service circuit-ID and displays this ID as the default. Press the Return key to select the default service circuit-ID.
	DECnet Errors: DSV$CONFIGURE adds the entry for the new access server to the NCP or MOP databases. If you get an error from DECnet while adding an access server, enter the DELETE command to remove the entry, correct the problem, then try again. The format of the DELETE command is identical to the ADD command.
	Example: The following example shows the ADD command on a DECnet/OSI system. In this example, a command not followed with a value indicates the selection of the default value.
| | ```
DSV> ADD SERVER
-Server Name: DGD700
-Ethernet Address: 08-00-2B-26-AE-32
-Server Type: DS700
-Service Circuit: [SVA-0]:
-Maintenance Password: [none]: %XBADCFE
-Dump File [MOP$DUMP:DS7DGD700.DMP]
-Load Image [MOP$LOAD:WWENG2.SYS]
``` |

Exiting DSV$CONFIGURE

To exit DSV$CONFIGURE, press Ctrl/Z or type EXIT.

Downloading the Software Image

Introduction

When you turn on power to the access server, it automatically requests downloading of the software image.

Procedure

Do the following to download software from your OpenVMS load host to your access server:

Step	Action
1	Do you have DECnet Phase IV software?
	• If no, go to the next step.
	• If yes, do the following:
	Enter the NCP CONNECT NODE *node-name* command to connect to the access server. Substitute your access server DECnet node name for *node-name*. If the access server manager defined a maintenance password, such as FEDCBA, enter the following command:
	`$ `**`MCR NCP`**
	Example:
	`NCP> `**`CONNECT NODE node-name SERVICE PASSWORD FEDCBA`** `Console connected (press CTRL/D when finished)`
2	If you have DECnet/OSI software, enter the following command:
	`$ `**`SET HOST/MOP=node-name/VERIFICATION=%XBADCFE`**
	`% CCR-I-CONNEST, connection established to remote` `system 08-00-2B-26-AE-32`
	Note: For DECnet/OSI software, entering %XBADCFE equates to the DECnet Phase IV maintenance password FEDCBA.
3	Press the Return key to get the access server prompt. Enter the login password. ACCESS is the access server default login password.
	Example:
	`# `**`ACCESS`**` (not echoed)`
	`Network Access SW Vn.n for DS90M (BLxx-xx)`
	`(c) Copyright 1997, Digital Equipment Corporation -` `All Rights Reserved`
	`Please type HELP if you need assistance`

Step	Action
4	Enter your user name (any string of 1 to 16 characters).
	Example:
	`Enter username>` **`MANAGER`**
5	Enter the SET PRIVILEGED command and enter the password. SYSTEM is the default password.
	Example:
	`Local>` **`SET PRIVILEGED`**
	`Password>` **`SYSTEM`** `(not echoed)`
6	The DECserver Network Access Software is stored under the load image name of WWENG2 or MNENG2, depending on your hardware. WWENG2 is used for the DECserver 700 or DECserver 900 hardware and MNENG2 is used for the DECserver 90TL or DECserver 90M hardware.
	The software requires hardware with at least 4 MB of physical memory. To complete the upgrade, all access servers must be aware of the new load image on the access server. Enter the CHANGE SERVER SOFTWARE command.
	Example:
	`Local>` **`CHANGE SERVER SOFTWARE WWENG2`**
7	Determine if you have Flash RAM installed. Enter the following command:
	`Local>` **`SHOW MEMORY CONFIGURATION`**
	Example: This command displays information about memory installed on the access server and the functional status of Flash RAM.

```
Dynamic RAM:                    4 M bytes
Non-Volatile RAM:               32 K bytes
Flash RAM:
   Installed:                        Yes
   Total size:                  1 M bytes
   Boot block:                      Valid
   Load Image:
     Name:                       MNENG2
     Size:                  978148 bytes
     Version:     Network Access SW V2.1 BLnn-xx
```

Step	Action
8	Do you have Flash RAM?
	• If no, go to the next step.
	• If yes, do the following:
	Enter the following command to update your Flash RAM from the network. The qualifier, DELAY *nn*, causes the access server to wait *nn* minutes before initializing. This permits any existing users time to log out. You must also wait *nn* minutes before you can continue with the procedure.
	`Local>` **`INITIALIZE FROM ETHERNET UPDATE FLASHRAM`** **`[DELAY 10]`**
9	If you do not have Flash RAM, enter the following command to update your load image from the network:
	`Local>` **`INITIALIZE FROM ETHERNET [DELAY 10]`**
	FROM and UPDATE Options: DECserver Network Access Software Version 1.0 and later support the FROM and UPDATE options. Load images WWENG1 and MNENG1 do not support the FROM and UPDATE options.

Verifying the Image Download

Procedure

To verify the image download, do the following:

Step	Action
1	Enter the NCP CONNECT NODE *node-name* command to connect to the access server. Substitute your access server DECnet node name for *node-name*. If the access server manager defined a maintenance password, such as FEDCBA, enter the following command:
	Example:
	`$ `**`MCR NCP`**
	`NCP> `**`CONNECT NODE `** ***`node-name`*** **` SERVICE PASSWORD FEDCBA`** `Console connected (press CTRL/D when finished)`
	DECnet/OSI Command: If you have DECnet/OSI, enter the following command:
	`$ `**`SET HOST/MOP=`** ***`node-name`*** **`/VERIFICATION=%XBADCFE`**
	`% CCR-I-CONNEST, connection established to remote` `system 08-00-2B-26-AE-32`
	Note: For DECnet/OSI, entering %XBADCFE equates to the DECnet Phase IV maintenance password FEDCBA.
2	Press the Return key to get the access server prompt. Enter the login password. ACCESS is the access server default login password.
	Example:
	`# `**`ACCESS`** ` (not echoed)`
	`Network Access SW Vn.n for DS90M (BLxxx-xxx)`
	`(c) Copyright 1997, Digital Equipment Corporation -` `All Rights Reserved`
	`Please type HELP if you need assistance`
3	Read the identification message to ensure the latest version of the DECserver Network Access Software image was downloaded.

Step	Action
4	Return to the NCP prompt by pressing Ctrl/D (Phase IV) or Ctrl/ \ (DECnet/OSI).
	DECnet Phase IV Example:
	`Local>` **`<Ctrl/D>`**
	DECnet/OSI Example:
	`Local>` **`<Ctrl/\>`**

Next Step

If this installation is a software upgrade, you can now reload all existing access servers.

Completing the Installation

Procedure

To complete the installation, do the following:

Step	Action
1	Install the software kit on at least two load hosts (this is optional). DIGITAL recommends that you have one load host for every 10 access servers. See the section, Installing Software on Additional OpenVMS Hosts, for more information.
2	Inform the system or network manager that the installation is complete.
3	Give this guide and any other software documents to the person who will be managing the access server.

Problem Solving Information

If you have any problems installing the software, refer to the *Network Access Server Problem Solving* guide.

Next Step

After you complete the installation, you are ready to configure the access server. You can use the Access Server Manager, a PC-based management tool, or the access server's command line interface.

If using the Access Server Manager, see the application's online help for instructions. If using the command line interface, see the *Network Access Server Management* and the *Network Access Server Command Reference* guides for instructions.

Installing Software on Additional OpenVMS Hosts

Procedure

To install the access server distribution software onto an additional OpenVMS load host that is not a member of a VAXcluster system, do the following:

Step	Action
1	Invoke VMSINSTAL at the original load host using the following command syntax. Substitute your device drive identifier for *device-id*.
	`$ @VMSINSTAL DNASnnn device-id OPTIONS G -`
	`_$ SYS$UPDATE:`
	OPTIONS G: OPTIONS G stores the save sets in the SYS$UPDATE directory.
2	Copy the save sets from the original load host to the alternate load host SYS$UPDATE directory. The save sets are:
	`DNASnnn .A, .B, .C, and .D`
	where *nnn* is the version number of the software. For example, 020 stands for version 2.0.
3	Run VMSINSTAL on the alternate load host.

Chapter 4

DIGITAL UNIX Installation

Overview

Introduction

This chapter describes how to install the DECserver Network Access Software on a DIGITAL UNIX system. This system is referred to as the load host. This chapter also describes how to download the software to the access server.

In This Chapter

This chapter contains the following topics:

- Preparing to Run the Installation Procedure

- Installing the Software

- Installing Onto Alternate Load Hosts

- Removing the Software

- Configuring the BOOTP Load Mechanism

- Configuring the Load Host Database

- Downloading the Software Image

- Verifying the Download

- Completing the Installation

Preparing to Run the Installation Procedure

Pre-Installation Steps

Before running the installation procedure:

- Determine which systems are load hosts for the DECserver network. You must install the distribution software onto all load hosts.

- Check that each load host has free disk space for downloading the DECserver Network Access Software subsets specified in the following section. If you are installing multiple subsets, then accumulate the disk space requirements for each subset.

- Determine which partition contains **/usr/tftpboot** and **/usr/opt** and how much free disk space is available on that partition.

  ```
  # df/usr
  ```
- Back up the system disk.

Subset Disk Space

Refer to the online release notes to determine how much disk space you need for the subsets.

Time Required

Installation takes approximately 5 minutes.

Installing the Software

Introduction

Use the **setld** command to install the DNAS software. The **setld** command is an automated process that maintains a register of all product subsets installed on the DIGITAL UNIX system. The **setld** command also provides an automated mechanism for the removal of a subset from the DIGITAL UNIX system.

What setld Does

The **setld** command:

- Creates a directory called **/usr/tftpboot** on the load host, if it does not already exist.

- Creates a soft link from **/tftpboot** to **/usr/tftpboot**.

- Copies the files from the distribution media into their destination directories.

- Maintains a database of subsets installed on the DIGITAL UNIX system.

Step 1: Start the Procedure

Do the following to start the installation procedure:

Step	Action
1	Log in to the system as superuser.
2	Place the distribution media on the appropriate device drive and mount the CD-ROM drive as an ISO 9660 volume with Rock Ridge Extensions. Use the following command syntax:
	# **mount -rt cdfs -o noversion,rrip** */dev /dir*
	The */dev* variable is the device name on your system.
	The */dir* variable is a directory in which you are mounting the CD-ROM file system.
3	Enter the **setld** command:
	# **setld -l** */dir/**DUNIX**
	C Compiler Required: The installation operation requires a C compiler.
	The Common Utilities subset is a prerequisite for the other two subsets.

Step 2: Answer Prompts

After you start the installation procedure, it prompts you to select the DECserver software subsets to install. The DECserver 900GM, 900GMX, and 900MC use the DECserver 900TM subset. Do the following:

Step	Action

1	Select the subsets to install. The procedure displays the following:
	
	`You are installing the following optional subsets:`
	`Network Access SW DS700/900TM Vx.x`
	`Network Access SW Utilities Vx.x`
	
	`Is this correct? (y/n): `**`y`**

2	Confirm that the subsets are correct. The procedure displays the following:
	
	`Checking file system space required to install`
	`selected subsets:`
	`File system space checked OK.`

Subset Selection Example

The following example installs two of the DECserver software subsets:

`The subsets listed below are optional:`

There may be more optional subsets than can be presented on a single screen. If this is the case, you can choose subsets screen by screen or all at once on the last screen. All of the choices you make will be collected for your confirmation before any subsets are installed.

```
  1) Network Access SW DS700/900TM Vx.x
  2) Network Access SW DS90TL/90M Vx.x
  3) Network Access SW Utilities Vx.x
Or you may choose one of the following options:

  4) ALL of the above
  5) CANCEL selections and redisplay menus
  6) EXIT without installing any subsets
Enter your choices or press RETURN to redisplay menus.
Choices (for example, 1 2 4-6): 1 3
```

Step 3: Read Installation Messages

After checking available disk space, the procedure ensures that you are aware of the BOOTP requirements. The messages that the daemons are not currently running are advisory and do not necessarily mean that the daemons will not be run from the inetd daemon when required. However, you should respond to the notices regarding the **/etc/inetd.conf** configuration file. (Refer to the Configuring the BOOTP Server section in this chapter.)

Example: Installation Messages

```
Beginning installation of DECserver Network Access SW Vx.x
common Utilities (NACBASEnnn) subset.
(c) Copyright 1997, Digital Equipment Corporation - All
Rights Reserved
The bootpd daemon is not now running.
The /etc/inetd.conf file is not configured to start the
bootpd daemon. Edit the /etc/inetd.conf file, uncomment or
insert the line containing bootpd, write out the file, and
restart inetd by issuing a 'kill -HUP'command to its
process id.


The tftpd daemon is not now running.
The /etc/inetd.conf file is not configured to start the
tftpd daemon. Edit the /etc/inetd.conf file, uncomment or
insert the line containing tftpd, write out the file, and
restart inetd by issuing a 'kill -HUP'command to its
process id
```
TFTP Boot Directory Messages

The procedure informs you if it is using an existing **/tftpboot** directory or creating a **/usr/tftpboot** directory and a symbolic link from **/tftpboot** to **/usr/tftpboot.**

```
Using existing /tftpboot directory.
```

Subset Installation Messages

The procedure then begins the installation of the specified load image subsets.

```
Network Access SW Utilities Vx.x
Copying from /mnt/NACnnn/kit (disk)
Verifying
Beginning installation of DECserver Network Access SW
DS700/900TM (NAC7IMAGEnnn) subset.
(c) Copyright 1997, Digital Equipment Corporation - All
Rights Reserved
     Software Version:  DECserver Network Access SW Vx.x
     Digital Equipment Corporation
     Do you wish to continue? [Yes]
```

Step 4: Complete Installation

After displaying installation messages, the procedure prompts you to confirm whether you want to continue. Type yes and press Return to complete the installation. The procedure installs and verifies the selected subsets.

```
Network Access SW DS700/900TM Vx.x
Copying from /mnt/NACnnn/kit (disk)
Verifying
Continuing installation of DECserver Network Access SW
common Utilities (NACBASEnnn) subset.
The addDECserver.c utility program will now be compiled and
moved to the /usr/bin directory.
```

The procedure informs you if it is using an existing **/etc/bootptab** file or creating a prototype **/etc/bootptab** file.

```
Using existing /etc/bootptab file.
```

The procedure then completes and updates the subset database.

```
Network Access Software Utilities Vx.x (NABASEnnn)
installed successfully
Network Access SW 700/900TM Vx.x (NA7IMAGEnnn) installed
successfully
```

Read the release notes and check for any changes that affect either this installation or the load host node database configuration. These notes are in **/usr/opt/DECserver/Release_Notes.txt**.

```
# more /usr/opt/DECserver/Release_Notes.txt
```

A postscript version of the release notes is also provided in **/usr/opt/DECserver/ Release_Notes.ps**.

```
Installation of the software is complete.
```

Utilities Subset Required

The DECserver Network Access Software Utilities Version x.x subset is considered optional by **setld**, but is required to install either of the other two subsets. The DECserver 90TL/DECserver 90M and DECserver 700/DECserver 900TM subsets both have a specified dependency on the utilities subset and will not install unless the dependency is met.

Installing Onto Alternate Load Hosts

Introduction

DIGITAL recommends that you establish an alternate load host. If the original load host is unavailable for downloading the software image, any alternate load host can load the DECserver unit. In addition, alternate load hosts can receive upline dumps from DECserver units and can perform other maintenance functions.

Requirements

To serve as an alternate load host, a system must have the distribution software installed and it must have entries for one or more DECservers in its node database.

Installing Onto Alternate DIGITAL UNIX Systems

To install the distribution software onto an alternate DIGITAL UNIX load host, repeat the installation procedure detailed in Installing the Software for each load host.

Removing the Software

Procedure

To remove the DECserver Network Access Software, do the following:

Step	Action
1	Log on to the system as superuser in the root directory.
2	Issue the **setld -d** command for each subset that you wish to remove. The **setld -i** command lists the names of all installed subsets.

 Examples:

setld -d NAC7IMAGEnnn

```
Deleting Network Access SW DS700/900TM Vx.x
(NAC7IMAGEnnn).

NAC7IMAGEnnn software deleted successfully.
```

setld -d NACBASE*nnn*

```
Deleting Network Access SW Utilities Vx.x
(NACBASEnnn).

Do you wish to remove the /etc/DECservers database
(used by the /etc/add_DECserver and related shell
scripts)? [Yes] Yes

NACBASEnnn software deleted successfully.
#
```

The /etc/bootptab File

The procedure does not remove the **/etc/bootptab** file. You can delete it manually.

Configuring the BOOTP Load Mechanism

DIGITAL UNIX Load Host Requirements

To be used as a load host for DECserver units, a DIGITAL UNIX system must have BOOTP installed and configured on the operational system. A DIGITAL UNIX system must be able to answer BOOTP requests for an automatic load from a DECserver unit defined in its node database.

Reference

For additional information on downloading, refer to the *Network Access Server Management* guide.

Verifying BOOTP Server Operation

To verify that the BOOTP server is running, execute the **netstat** command. The UDP protocol should contain an entry for the BOOTP server and the TFTP server. If no such entry exists, then it is likely that the BOOTP server is not configured into the operational DIGITAL UNIX system. The section, Configuring the BOOTP Server, contains the procedure necessary to configure the BOOTP server.

netstat Example

```
# netstat -a
Active Internet connections (including servers)

Proto Recv-Q Send-Q  Local Address          Foreign Address        (state)

 . . .

udp       0      0  *.bootps               *.*

 . . .

udp       0      0  *.tftp                 *.*

. . .
```

Configuring the BOOTP Server

The following steps are generic instructions necessary to configure a BOOTP server into an operational DIGITAL UNIX system:

Step	Action

1	Ensure that both the TFTP and the BOOTP servers are enabled in the configuration file **/etc/inetd.conf**. These protocols are enabled when the following [uncommented] lines appear in the nominated file:
	
	`tftp   dgram  udp  wait  root  /usr/sbin/tftpd  tftpd -r /tftpboot`
	`bootps dgram  udp  wait  root  /usr/sbin/bootpd bootpd`
	
	Editing: Use a text editor to add these lines to the file or to remove the comment prefix (#) from the existing lines.
	
	Use Restricted TFTP: DIGITAL recommends that you use restricted TFTP for security reasons. For the rest of this document, examples are given under the assumption that restricted TFTP is used with a restricted path called **/tftpboot.** It is not required to call the TFTP restricted path **/tftpboot.**

2	Ensure that the BOOTP server listening port (**bootps**), the BOOTP client destination port (**bootpc**), and the TFTP server listening port (**tftp**) are configured into the configuration file **/etc/services**. Use a text editor to add these lines to the file or to remove the comment prefix (#) from the existing lines.
	
	`bootps      67/udp      # BOOTP server listening port`
	`bootpc      68/udp      # BOOTP client destination port`
	`tftp        69/udp      # TFTP listening port`

3	Ensure that the UDP and the IP are configured in the **/etc/protocols** file:
	
	`ip     0     IP    # internet protocol, pseudo protocol number`
	`udp    17    UDP   # user datagram protocol`

4	The system must signal the **inetd** daemon to enable any modifications you make to any configuration file mentioned in this topic. You usually achieve this by entering the **kill -HUP** command for the inetd process. **# ps aux	grep inetd	egrep -v grep** `root 219 0.0.0.0 3.16M OK ?? IW May 20 0:02:90 /usr/sbin/inetd` **# kill -HUP 219**

Configuring the Load Host Database

Introduction

After installing the software and checking that a BOOTP server is configured, configure the load host database so that it complies with the DECserver load request, and the requirements for a DIGITAL UNIX system to accept a DECserver dump request.

The database that the BOOTP daemon uses is located in the file **/etc/bootptab**. The manipulation of this database is common across DIGITAL UNIX systems. For explicit information, refer to the online man pages for the BOOTP daemon. These man pages are supplied on the DIGITAL UNIX system. You can access them using the following command:

```
# man [-] bootpd
```

When configuration is complete, the DIGITAL UNIX operating system acts as a load host for each DECserver client that has an entry in the node database.

Required Information

When you configure the load host database, provide the following information for each DECserver client:

- The DECserver platform type (DECserver 700, DECserver 90TL, DECserver 90M, DECserver 900TM, DECserver 900GM, DECserver 900GMX, or 900MC).

- The subnet mask for the Internet subnetwork. Obtain this parameter, which is usually common across all DECserver networks being served by the load host, from the network manager.

- The hardware Ethernet address of the DECserver client. Obtain the hardware Ethernet address of the DECserver client from the DECserver hardware.

- A name for the DECserver client. Obtain the name from the network manager who is responsible for ensuring the unique name in the Internet network.

- An Internet address for the DECserver client. Obtain the address from the network manager who is responsible for ensuring the unique Internet address in the Internet network.

Optionally, when you update the database, you can specify an alternate load image name and gateway address.

Configuring the Load Host Database

To configure the load host database, do the following:

Step	Action
1	To add a DECserver client to the database, enter the **/etc/add_DECserver** command. To get help, type a question mark (?).

Example:

 # /etc/add_DECserver

```
DECserver Node Name ?              myds
DECserver DS700 or DS90TL ?        DS700
DECserver Load Image <WWENG1> ?    WWENG2
DECserver Ethernet Address ?       08-00-2B-FC-01-76
DECserver Internet Address ?       192.12.79.6
DECserver Gateway Address ?        192.12.79.3 (optional)
DECserver Subnet Mask ?            255.255.255.0 (optional)
```

Alternative Method: You can also enter the **/etc/add_DECserver** command with the appropriate arguments on a single command line. The format is as follows:

```
# /etc/add_DECserver node server_type load_image ethernet_address
internet_address [gateway_address] [subnet_mask]
```

DECserver Names: A DECserver name must be 1 to 16 alphanumeric characters; the first character must be alphabetic. Underscores are not permitted. DECserver names are case sensitive.

Step	Action
2	Check to see if a message displays the location of the dump file. For example:

```
DECserver Dump File:    /tftpboot/WW08002BFC0176
```

Do Not Delete Dump Files: Do not delete the DECserver dump file because it disables dumps. Also, do not delete any files in the **/tftpboot** directory ending with **.dump**.

Step	Action
3	Compare the file you have in /etc/bootptab with the sample file from the software distribution kit (**/usr/opt/DECserver/bootptab**).

Do one of the following:

- If the entries have compatible formats, enter the **/etc/upd_DECserver** command.
- If you are running a BOOTP server with a file format different from the sample **bootptab** file, manually convert the database file to the format you are using. The database file to convert is in the **/etc/DECservers** file. The sample **bootptab** file describes the format of the entries.

Step	Action
4	After you add one or more access servers, enter the **/etc/upd_DECserver** command to put the access servers into the **/etc/bootptab** database.
	TFTP Server in Restricted Mode: If the TFTP server runs in restricted mode, do not use the home directory field in the **/etc/bootptab** file, unless the concatenation of the **tftp** restricted path, the home directory path, and the bootfile generate a valid (existing) file specification.
	TFTP Server in Nonrestricted Mode: If the TFTP server runs in a nonrestricted mode, the concatenation of the home directory path and the bootfile must generate a valid (existing) file specification.
	Bootfile Name: The bootfile name (absolute or relative) must not exceed 31 characters. However, the concatenation of the home directory and the bootfile can exceed 31 characters, with an upper limit of 128 characters, as defined in the bootstrap protocol.

5	To display the contents of the DECserver database, enter the following command:
	
	# /etc/list_DECserver
	
	`myds:  tc=DS.default  ha=08002BFC0176  ip=192.12.79.6: bf=MNENG1`
	`gw=192.12.79.3    sm=255.255.255.0`

6	To remove an access server from the database, enter the following command: **# /etc/rem_DECserver DECserver_name**
7	After you remove one or more access servers, enter the **/etc/upd_DECserver** command to remove the access servers from the **/etc/bootptab** database.

Load Host Database File Structure

The structure of the load host database file (**/etc/bootptab**) constitutes one declaration per loadable client. The syntax for the declaration of each DECserver client is as follows:

```
client_name:ht=1:ha=hardware_address:ip=internet_address:
tc=DECserver:
```

- *Client_name* is a name of the DECserver as defined by the network manager.

- *Hardware_address* is obtained from the DECserver hardware.

- *Internet_address* is a unique address obtained from the network manager.

Example: BOOTP Load Host Database File

The following example of a BOOTP load host database file illustrates:

- An Internet subnetwork mask of 255.255.255.0

- A database entry for a DECserver 700 unit whose name is DS700A, whose Ethernet address is 08-00-2B-A1-2D-18, and whose Internet address is 16.153.64.9

- A database entry for a DECserver 90M whose name is DS90B, whose Ethernet address is 08-00-2B-25-CD-A6, and whose Internet address is 16.153.64.32

```
#
# Generic DECserver BOOTP database definitions
#
DECserver:hd=/tftpboot:bf=null:sm=255.255.255.0:hn:vm=auto:bs=auto
#
# Specific DECserver BOOTP database definitions
#
    DS700A:ht=1:ha=08002BA12D18:ip=16.153.64.9:tc=DECserver:
    DS90B:ht=1:ha=08002B25CDA6:ip=16.153.64.32:tc=DECserver:
```

Configuring the Image Dumping Capability

Each individual DECserver client has the capability to dump its memory image for analysis by Digital Equipment Corporation. The DECserver invokes this capability under the following conditions:

- A privileged user enters the **CRASH** command.

- An unrecoverable system error occurs.

- Certain unrecoverable hardware faults occur.

Preventing Dump Operations

One of the following can prevent DECserver dump operations:

- A privileged DECserver user disabling the capability using the following command:

  ```
  Local> CHANGE SERVER DUMP DISABLED
  ```

- The absence of a load host to accept the dump image from the DECserver.

  The default condition is that the load host does not accept the dump image from a DECserver unit. You must configure the ability of the load host to accept a dump image of each DECserver unit on the network. A load host accepts a dump image from a DECserver unit under the following conditions:

  — A base dump image file is created on the load host.

    ```
    # cp /usr/tftpboot dump_image_filename
    ```

  — The permission mode for the dump image file provides global write access.

    ```
    # chmod a+w dump_image_filename
    ```

The construction of the *dump_image_filename* is critical for the successful completion of the image dump process. The rules that ensure correct construction of the *dump_image_filename* are as follows:

— The file must reside on a directory path to which the TFTP daemon has access. (Refer to Configuring the BOOTP Server.)

— The file name must be in upper case.

— The syntax for the file name is {WW } or {MN }_*hardware_address.*

  The file name prefix defines the type of DECserver to which the dump image refers. The hardware address is the same value used in Required Information.

Downloading the Software Image

Introduction

This procedure verifies that the load host is configured correctly so that the DECserver unit loads its software image from the load host using the BOOTP mechanism.

Procedure

If you want the DECserver unit to run the most recently installed software, reload the software from the load host by performing the following steps:

Step	Action
1	Enter the **telnet** *internet-address* command to connect to the Telnet remote console. Substitute the Internet address of the access server for *nn.nn.nn.nn*.
	peach# **telnet** *nn.nn.nn.nn*
	`Trying nn.nn.nn.nn.`
	`Connected to nn.nn.nn.nn.`
	`Escape character is "^]".`
2	Press the Return key to get the access server prompt, then enter the login password. ACCESS is the default login password.
	# **ACCESS** (not echoed)
	`Network Access SW Vx.x for DS700-nn (BLnn-nn)`
	`(c) Copyright 1993, Digital Equipment Corporation -` `All Rights Reserved`
	`Please type HELP if you need assistance.`
3	Enter your user name (any string of 1 to 16 characters) and press Return.
	Enter username> **swinstaller**
4	Enter the **SET PRIVILEGED** command, enter the password and press Return. SYSTEM is the default password.
	Local> **SET PRIVILEGED**
	Password> **SYSTEM** (not echoed)

Step	Action
5	Version 1.3 (and later) of the DECserver Network Access Software is stored under the load image name of WWENG2 or MNENG2, depending on your hardware. WWENG2 is used for the DECserver 700 or DECserver 900TM hardware and MNENG2 is used for the DECserver 90TL or DECserver 90M hardware. Version 2.0 requires hardware with at least 4 MB of physical memory. To complete an upgrade, all access servers must be aware of the new load image. Enter the **CHANGE SERVER SOFTWARE** command. Local> **CHANGE SERVER SOFTWARE WWENG2**
6	To determine if you have Flash RAM installed, enter the following command: Local> **SHOW MEMORY CONFIGURATION**

```
Dynamic RAM:                        4 M bytes
Non-Volatile RAM:                  32 K bytes
Flash RAM:
 Installed:                              Yes
 Total size:                        2 M bytes
 Boot block:                           Valid
 Load image:
    Name:                           WWENG2
    Size:                      978148 bytes
    Version:          Vx.x for 700-xx BLnn-xx
```

Step	Action
	This command displays information about memory installed on the access server and the functional status of Flash RAM.
7	If you have Flash RAM, enter the following command to update your Flash RAM from the network. The qualifier, DELAY *nn*, causes the access server to wait *nn* minutes before initializing. This permits any existing users time to log out. You need to wait *nn* minutes before continuing. Local> **INITIAL FROM ETHERNET UPDATE FLASHRAM DELAY 10**
8	If you do not have Flash RAM, enter the following command to update your load image from the network: Local> **INITIALIZE DELAY 10** **FROM and UPDATE Options:** The DECserver Network Access Software Version 1.0 and later support the FROM and UPDATE options. Load images WWENG1 and MNENG1 do not support the FROM and UPDATE options. These options also require ROM Version 4.0 or later.

Verifying the Download

Procedure

To verify the download, do the following:

Step	Action
1	Enter the **telnet** *internet-address* command to connect to the Telnet remote console. Substitute the internet address of the access server for *nn.nn.nn.nn*.
	peach# **telnet** *nn.nn.nn.nn*

	`Trying nn.nn.nn.nn...`
	`Connected to nn.nn.nn.nn.`
	`Escape character is "^]".`

2	Press the Return key to get the access server prompt, then enter the login password. ACCESS is the access server default login password.
	# **ACCESS** (not echoed)

	`Network Access SW V1.n for DS700-nn  (BLnn-nn)`
	`(c) Copyright 1993, Digital Equipment Corporation -`
	`All Rights Reserved`
	`Please type HELP if you need assistance`

3	Read the identification message to ensure that the correct version of the DECserver Network Access Software was downloaded.
4	Enter the logout command to log out of the access server and press Return.
	Local> **logout**
5	Enter the logout command to log out of the system and press Return.
	peach> **logout**
	If this installation is a software upgrade, either you or the network manager can now reload all existing access servers.

Completing the Installation

Procedure

To complete your installation, do the following:

Step	Action
1	Install the software kit on at least two load hosts. This is recommended but not required.
2	Inform the system or network manager that the installation is complete.
3	Give this guide and other software documents to the person who manages the access server.
4	Save any MIB files that you want to keep for use with network management in the **/usr/opt/DECserver** directory.
5	Delete the kit files if you no longer need them.

Problem Solving Information

If you have any problems installing the software, refer to the *Network Access Server Problem Solving* guide.

Next Step

After you complete the installation, you are ready to configure the access server. You can use the Access Server Manager, a PC-based management tool, or the access server's command line interface.

If using the Access Server Manager, see the application's online help for instructions. If using the command line interface, see the *Network Access Server Management* and the *Network Access Server Command Reference* guides for instructions.

Chapter 5

ULTRIX Installation

Overview

Introduction

This chapter describes how to prepare for installing the software and how to install the DECserver Network Access Software onto an ULTRIX system. This system is the load host.

In This Chapter

This chapter includes the following topics:

- Preparing for Installation

- Installing the Software on the Load Host

- Configuring the Load Host Using the MOP Protocol

- Configuring the Load Host Using the BOOTP Protocol

- Modifying the /etc/inetd.conf Database

- Modifying the /etc/services Database

- Restarting the inetd Daemon

- Downloading the Software Image

- Verifying the Download

- Completing the Installation

Preparing for Installation

Pre-Installation Steps

Before you install the software on your load host, do the following:

- If you have a new DECserver unit with Flash RAM, follow the procedure to update the DECserver database. (See the Configuring the Load Host section in this chapter.)

- Check your load host for the following:

  — ULTRIX Version 4.0 or any subsequent maintenance release up to the next major product release is installed.

  — For MOP load hosts, the Ethernet controller must be on the same Ethernet as the access server. For BOOTP load hosts, the load host must have network connectivity to the access server.

- If you are using the Maintenance Operations Protocol (MOP) to configure the load host, verify that the MOP daemon is installed and running.

- If you are using the Internet Bootstrap Protocol (BOOTP) to configure the load host, verify that the BOOTP and the TFTP daemons are installed and running. You can obtain the BOOTP daemon by loading the ULTRIX Version 4.2 INET subset.

- Verify that you have superuser privileges.

- Back up the system disk before installing the software.

- Write down the access server node name supplied by the network manager and Ethernet hardware address supplied by the hardware installer.

Time Required

The installation requires approximately 5 minutes to complete.

License Management Facility

License Management Facility (LMF) is not required.

Installing the Software on the Load Host

Introduction

To install the DECserver Network Access Software on the load host, perform the following steps. To stop the installation at any time, press Ctrl/C.   You need to press the Return key after entering any input.

Note

If you are installing the DECserver Network Access Software into a Remote Installation Services (RIS) area, invoke the RIS utility and choose the Install Software option from the RIS menu. For the complete procedure, refer to *ULTRIX Guide to Remote Installation Service*s.

Step 1: Start the setld Procedure

Do the following:

Step	Action
1	Place the CD-ROM on the appropriate device drive and mount it as an ISO 9660 volume (do not specify Rock Ridge Extensions). Use the following command syntax:
	`# mount -rt cdfs -o noversion /dev /dir`
	The */dev* variable is the device name on your system.
	The */dir* variable is a directory in which you are mounting the CD file system.
2	Create a temporary directory and dearchive the tar file on the CD using the following command syntax:

	`# mkdir /temp-dir`
	`# cd /temp-dir`
	`# tar -xvf /dir/ULTRIX/ULTRIX.TAR` or `# tar -xvf /dir/ULTRIX/ultrix.tar`
	`# cd ..`

	The */temp-dir* variable is the name of your temporary directory.
	The */dir* variable is the directory in which you mounted the CD file system.

Step	Action
3	Execute the setld procedure using the following command syntax:
	# **setld -l /ttemp-dir**
	The -l option indicates the load option.
	The */temp-dir* variable indicates the temporary directory you used when you dearchived the tar file.
	RIS Installation: If you are installing the access server software from a RIS environment, use the RIS name and node instead of the temporary directory .
4	Delete your temporary directory using the following command syntax:
	# rm -fr /temp-dir

Step 2: Select Subsets

Do the following:

Step	Action
1	To install the DECserver Network Access Software, choose either option 1, option 2, or option 3. This example uses option 2.
	Base your selection on the appropriate load image. MNENG2 is used for the DECserver 90M and DECserver 90TL hardware, and WWENG2 is used for the DECserver 700, DECserver 900TM, and DECserver 900GM hardware.

```
 *** Enter Subset Selections ***
The subsets listed below are optional:
1) Network Access Software 90TL Vn.n
2) Network Access Software 700 Vn.n
3) All of the Above
4) None of the Above
5) Exit without installing subsets
Enter your choice(s): 2
```

2	If the subset that appears is the correct software, enter Y.

```
You are installing the following subsets:
Network Access Software 700 Vn.n

Is this correct? (y/n): y

(c) Copyright 1988-1996, Digital Equipment Corporation -
All Rights Reserved

Do you wish to continue? [YES]
```

3	If you are using MOP and an old version of dsvconfig exists, the procedure asks if you want to delete it. To save the old version of dsvconfig, enter N. If you enter Y, the old version is deleted.

```
Network Access Software 700 Vn.n (NA7BASEnnn)
  Copying from /dev/rmt0h
     Working...Wed Jan 24 10:15:45 EST 1996
     Verifying
     Working...Wed Jan 24 10:16:18 EST 1996

Network Access Software 700 Vn.n (NA7BASEnnn) installed
successfully.
Previous version of dsvconfig has been superseded.Delete
old version? y
Previous version of dsvconfig has been removed.

Saving current rc.local to rc.local.sav5 - modifying
rc.local...done
#
```

Next Steps

Do the following:

Step	Action
1	After completing the installation, delete the temporary directory using the following command syntax: `# ` **`rm -fr /temp-dir`** The *temp-dir* variable is the temporary directory you used when you dearchived the installation tar file.
2	If you are using the MOP protocol to configure the load host, go to the Configuring the Load Host Using the MOP Protocol section in this chapter. If you are using the BOOTP protocol to configure the load host, go to the Configuring the Load Host Using the BOOTP Protocol section in this chapter.

Configuring the Load Host Using the MOP Protocol

Validating the Access Server Node Name

Check the following to validate the access server node name:

- If you are running DECnet software, enter the **ncp show node** *node-name* command to check that each access server has a unique node name. Use your access server node name for node name.

  The dsvconfig procedure does not let you specify an access server node name that is already defined in the database. Each node name must have one to six characters. The first character must be alphabetic.

  ```
  # ncp show node nodename
  Node Volatile Summary as of Mon Jan 22 15:07:36 EDT 1996 ncp -
  listener response: Unrecognized component, Node
  ```

- If you are not running DECnet software, enter the **getnode** *node-name* command to check that the access server node name is not in use. The following example shows the system response. If the system response shows the *node-name* as defined, you need to have a new node name assigned.

  ```
  # getnode nodename
  getnode can't fetch node nodename from data base: Can't assign
  requested address
  ```

Procedure

To configure the load host, do the following:

Step	Action
1	Change the directory to /usr/lib/dnet and start dsvconfig. `# cd /usr/lib/dnet # dsvconfig`
2	To add a new access server, choose option 2 from the menu. **Configuration Shell Script:** The configuration shell script, dsvconfig, accommodates various access servers in addition to the DECserver 700, DECserver 90TL, DECserver 90M, DECserver 900TM products. Use the shell script supplied on this kit for all modifications to the DECnet node database. **The dsvconfig Commands:** Do not execute any DECnet or MOP commands that are a part of dsvconfig separate from this procedure. Otherwise, databases could be changed without changing dsvconfig.dat.

```
DECserver Configuration Procedure - Version Vn.n
-------------------------------------------------
Procedure started Mon Jan 22 15:14:39 EDT 1996
-------------------------------------------------
You must assign a unique node name for each DECserver
you are going to configure.

Please be sure to read/print your release notes. The
release notes can be found in /usr/lib/dnet.

 Press <RET> to continue

    DECserver Configuration Procedure

      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
6 - Exit from this procedure
Your selection ? 2
```

Step	Action
3	Enter the following information:

- Access server type
  - — DS700 for a DECserver 700
  - — DS90TL for a DECserver 90TL
  - — DS90M for a DECserver 90M
  - — DS900TM for a DECserver 900TM or DECserver 900GM
- Access server node name and address
- Access server Ethernet address

Step	Action
4	The **dsvconfig** procedure determines the service circuit-ID of your load host and displays it as the default. You should use the default unless your load host has more than one Ethernet controller. Press the Return key to select the default service circuit-ID.

The dsvconfig procedure adds the entry for the new access server to the databases and enables the specified service circuit.

DECnet Errors: If you get a DECnet error message while adding an access server, choose option 4 to delete the entry, correct the problem, then try again.

Step	Action
5	To exit from dsvconfig, choose option 6.

```
Type <6> to return to menu.
Type <RET> to accept default

DECserver type ? DS700
DECserver node name for unit? node-name
DECserver Ethernet address for this unit? xx-xx-xx-xx-xx-
xx
Service circuit for this unit [UNA-0] ?

    DECserver Configuration Procedure

       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
6 - Exit from this procedure
Your selection? 6

NOTE: The /etc/mop_mon daemon must be running before
loading any DECserver
```

Step	Action
6	Print the release notes for the DECserver 700 and DECserver 900TM units or the DECserver 90TL and DECserver 90M units by entering the following command: `# lpr nas_relnotes.mem`
7	For instructions on downloading the software image, see the Downloading the Software Image section in this chapter.

Configuring the Load Host Using the BOOTP Protocol

Configuring the Load Host

To configure the load host:

Step	Action
1	Enter the following items in the **/etc/bootptab** file:

• Host name (name of the access server)

• Hardware type (1 for Ethernet)

• Hardware address (Ethernet address of the access server)

• Internet address (Internet address of the access server)

• Boot file (name of the load file)

• Home directory (location of the load file)

The name and location of the load file are resolved as follows:

— If you have defined a load image software name in NVRAM, the load host uses that name together with the home directory specified in **/etc/bootptab** (it ignores the boot file name in **/etc/bootptab**).

— If you have defined the software name to be a null string, the load host uses the home directory and boot file name specified in **/etc/bootptab**.

— If you supply a full path name to the file, the load host uses what you specified (it ignores the home directory in **/etc/bootptab**).

On factory load, the access server requests WWENG1, MNENG1, WWENG2, or MNENG2. The boot file name is in uppercase letters; thereafter, it can be specified in any combination of uppercase and lowercase letters if the access server is no longer using the factory default file name. The boot file location must match the location specified in the **/etc/bootptab** file.

You do not need to define an Internet address on the access server for loading purposes—the access server gets it from **/etc/bootptab** file. However, if you specify an Internet address, it must match the Internet address specified in the **/etc/bootptab** file.

Step	Action
2	Ensure that the **bootpd** and **tftpd** daemons are configured correctly and running. See the section, Modifying the /etc/inetd.conf Database.

Step	Action
3	Create soft links for all of the load image files so that they appear in a common directory. See the section, Setting Up the Restricted TFTP Path to the Boot Files.
4	For a full explanation of configuring an ULTRIX host as a BOOTP server, refer to the **bootpd(8)** and **tftpd(8c)** reference pages of the ULTRIX system and network documentation.
5	For instructions on downline loading the software image, see the section, Downloading the Software Image.

The /etc/bootptab File

The **/etc/bootptab** file contains information required for BOOTP booting. The contents of the file depend on the BOOTP server being used. There are two versions of this server:

- The earlier version, which is provided with the ULTRIX operating system

- The Carnegie Mellon University (CMU) version, which is provided with the DECserver Network Access Software for ULTRIX

The server you use depends on your needs. The CMU version offers more functionality than the earlier version. However, if your system is already set up with the earlier version, it may be simpler and more practical to continue using that version.

When using BOOTP, the access server is actually the client for the BOOTP server.

Setting Up the Standard ULTRIX bootptab File

The standard ULTRIX BOOTP server is the earlier version of the BOOTP server and is provided with the ULTRIX operating system. A typical entry for an access server is as follows:

```
# host      htype haddr             iaddr           bootfile
  apple     1     08:00:04:00:b8:dd 16.122.128.112  wweng1
```

The fields of the entry are defined as follows:

Field	Description
host	The Internet node name of the access server.
htype	The network hardware type; always equals 1; signifies Ethernet.
haddr	The access server Ethernet hardware address in hexadecimal format.

Field	Description
iaddr	The access server Internet address.
bootfile	The name of the boot file to be downloaded to the access server.

TFTP Server Considerations

If the TFTP server runs in restricted mode, do not use the home directory field in the **/etc/bootptab** file, unless the concatenation of the TFTP restricted path, the home directory path, and the boot file generate a valid (existing) file specification.

If the TFTP server runs in a nonrestricted mode, then the concatenation of the home directory path and the boot file must generate a valid (existing) file specification.

In either case, restricted or nonrestricted mode, the boot file name (absolute or relative) must not exceed 31 characters. However, the concatenation of the home directory and the boot file can exceed 31 characters, with an upper limit of 128 characters, as defined in the bootstrap protocol.

Setting Up the CMU bootptab File

The CMU BOOTP server is an enhancement of the earlier version and includes the vendor extensions field. The format of the **/etc/bootptab** file is different from the format of the earlier version.

A typical entry for an access server using the CMU version is as follows:

```
lion:ht=ethernet:ha=7FF8100000AF:ip=128.2.11.1:hd=/
tftpboot:bf=wweng1:
```

The fields of the entry are defined as follows:

Field	Description
lion	The Internet node name of the access server.
ht	The local network type (always Ethernet).
ha	The Ethernet hardware address.
ip	The Internet address.
hd	The home directory. (It must be the same as the TFTP established path if TFTP is running in restricted mode.)
bf	The boot file name.

Configuring the Load Host Using the BOOTP Protocol

Depending on whether the TFTP server runs in restricted or nonrestricted mode, the hd field must be used to adjust the boot file specification that the server returns to the client, which then sends it to the TFTP server.

If the TFTP server runs nonrestricted, then hd must be omitted and the bf field must be assigned the full (absolute) boot file specification.

If the TFTP server runs restricted with a path, for example, **/tftpboot**, then the hd field must be assigned the same path. The BOOTP server concatenates the path assigned to hd with the relative boot file specification assigned to bf to get the full boot file specification so it can check the existence of the file. If the file exists, the server writes the boot file specification assigned to bf into the BOOTP reply message. When the TFTP server receives the TFTP request from the client, it extracts the boot file name and concatenates it with the restricted TFTP path to obtain the full file specification to be downloaded to the client.

If you use BOOTP to boot the access server in a pure Internet network, or if you use MOP to boot the access server, then either of the two BOOTP servers can be used.

If you are using the new BOOTP server, the new **/etc/bootptab** file format must be used. If you are upgrading and want to use the new BOOTP server, then the entries from the old **/etc/bootptab** file must be translated and added to the new **/etc/bootptab** file.

Modifying the /etc/inetd.conf Database

Procedure

Perform the following for both MOP and BOOTP booting:

Step	Action
1	Find the bootp entry:

- If you are using the earlier BOOTP server version, then uncomment or add the following entry:

  bootp dgram udp wait /usr/etc/bootpd bootpd -d -i

  The -d option enables the bootp daemon to write messages into the syslog file if logging is enabled on your system. The -i option lets the bootp daemon run under the inet daemon.

- If you are using the CMU BOOTP server version, then the bootp entry must be as follows:

  bootp dgram udp wait /usr/etc/bootpd bootpd -d

  You cannot use the -i option because it is an invalid option. The server assumes by default that it is called by the **/etc/inetd** daemon.

This entry causes the **/etc/inetd** daemon to start the **/usr/etc/bootpd** server when the system receives a BOOTP request.

Remove -d Option: After you have configured the system and you know the access server boots, remove the -d option from the bootp entry so the syslog file does not fill up with BOOTP messages.

Step	Action
2	Find the TFTP entry (only if you use BOOTP). If you use MOP, TFTP is not needed.
	• If you are using the nonrestricted TFTP server, use the following TFTP entry:
	tftp dgram udp nowait /usr/etc/tfpd tftpd
	• If you are using the restricted TFTP server with a path, use the following TFTP entry:
	tftp dgram udp nowait /usr/etc/tfpd tftpd -r /tftpboot
	The -r option ensures that the TFTP daemon can access only files within the **/tftpboot** directory.
	Use Restricted ftp: DIGITAL recommends that you use restricted TFTP for security reasons. For the rest of this document, examples are given under the assumption that restricted TFTP is used, with a restricted path called **/tftpboot**. It is not a requirement to call the TFTP restricted path **/tftpboot**.

If you are using a restricted TFTP server for the primary booting, set up the restricted path (**/tftpboot**) to the boot file as described in the section, Setting Up the Restricted TFTP Path to the Boot Files.

Setting Up the Restricted TFTP Path to the Boot Files

If BOOTP and restricted TFTP (with path **/tftpboot**) are used as the primary boot procedure, do the following to set up the path to the boot files:

Step	Action
1	Enter the following commands:
	`# cd /` `# mkdir /usr/tftpboot` `# may already be there`
2	Check to see if a symbolic link exists by entering the following command:
	`# ls -l tftpboot`
3	If the link does not exist, enter the following command to create one:
	`# ln -s /usr/tftpboot tftpboot`

Step	Action
4	For restricted mode TFTP, the access server load image files must be located in the restricted path. If you use both MOP loading and BOOTP loading, make a copy of the load image files from the **/usr/lib/dnet** area to the **/tftpboot** area. Enter the following commands:

```
# cd tftpboot
# cp /usr/lib/dnet/mneng1.sys MNENG1
# cp /usr/lib/dnet/mneng2.sys MNENG2
# cp /usr/lib/dnet/wweng1.sys WWENG1
# cp /usr/lib/dnet/wweng2.sys WWENG2
```

Note: The commands you enter depend on which option you chose in the section,Installing the Software on the Load Host. MNENG* is used for the DECserver 90TL and DECserver 90M hardware, and WWENG* is used for the DECserver 700, DECserver 900TM, and DECserver 900GM hardware.

If you load the access servers through BOOTP only, you may optionally delete the four files in **/usr/lib/dnet** that were copied to **/tftpboot**.

To ensure that the path is configured correctly for all versions of the BOOTP server, do the following:

Step	Action
1	Create the following soft link.

```
# ln -s . tftpboot
```

Step	Action
2	Verify the files are correct by entering the following commands:

```
# cd /tftpboot
# ls -l
```

Display: The display should look similar to the following:

```
total 3202

-rw-r--r-- 1 root    590366  Jan 15 12:39   MNENG1
-rw-r--r-- 1 root   1068544  Jan 15 12:39   MNENG2
-rw-r--r-- 1 root    589312  Jan 15 12:40   WWENG1
-rw-r--r-- 1 root    978994  Jan 15 12:40   WWENG2
lrwxr-xr-x 1 root         1  Jan 15 12:41   tftpboot ->
```

Modifying the /etc/services Database

Procedure

Perform the following for both MOP and BOOTP booting:

Step	Action
1	Look for the BOOTP entry.
	If you are using the earlier BOOTPD server, then add or uncomment the following entry:
	`bootp  67/udp`
	If you are using the CMU BOOTPD server that enables the access server to accept connections from both DECnet and Internet nodes, then add or uncomment the following entries:
	`bootps  67/udp    # bootp server` `bootpc  67/udp    # bootp client`
	The number in the entry denotes the port that the server listens to, and UDP denotes the User Datagram Protocol.
2	Add or uncomment the TFTP entry as follows:
	`tftp 69/udp # tftp server`

Restarting the inetd Daemon

Restart the inetd daemon to use the changes you made to the **/etc/inetd.conf, /etc/bootptab** and **/etc/services** files. Before restarting **inetd**, you must kill the **oldbootpd** and **inetd** daemons.

```
# ps -ax | grep inetd | egrep -v grep
root 510 0.0 1.1 184 132 ? I 0:00 /etc/bootpd -d
# ps -ax | grep bootpd | egrep -v grep
root 1262 0.0 1.5 204 172 ? I 0:00 /etc/bootpd -d
```

In this example, 510 and 1262 are the PIDs.

To restart the daemons using these PIDs, enter the following commands:

```
# kill  -9 1262
# kill  -9  510
# /etc/inetd
```

Users cannot connect to the system or boot from the system during the short time required to restart the daemons.

Downloading the Software Image

Performing the Download

When the access server is powered up, downloading of the software image occurs automatically.

If you want the access server to run the most recently installed software, reload the software from the load host by performing the following steps:

Step	Action
1	If you are using the MOP protocol, use the **/etc/ccr -n node-name** command to connect to the access server. Substitute your access server node name for *node-name*. If a maintenance password has been defined by the access server manager, use the following command: **/etc/ccr -n *node name* -p *password***. Substitute your access server maintenance password for password. # **/etc/ccr n node name** `ccr: Remote console reserved`

2	If you are using the BOOTP protocol, use the **telnet *internet-address*** command to connect to the Telnet remote console. Substitute the Internet address of the access server for *nn.nn.nn.nn*.
	
	`peach> `**`telnet nn.nn.nn.nn`**
	`Trying nn.nn.nn.nn...`
	`Connected to nn.nn.nn.nn.`
	`Escape character is "^]".`

3	Press the Return key to get the access server prompt, then enter the login password. ACCESS is the access server default login password.
	
	`# `**`ACCESS`**` (not echoed)`
	`DECserver 700-08 Communications Server V1.1 (BLxx) - LAT`
	`V5.2`
	
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	`Rights Reserved`
	
	`Please type HELP if you need assistance`

4	Enter your user name (any string of 1 through 16 characters). `Enter username> `**`swinstaller`**

Step	Action
5	Use the SET PRIVILEGED command and enter the password. The default password is SYSTEM.

```
Local> SET PRIVILEGED
Password> SYSTEM (not echoed)
```

6	The DECserver Network Access Software is stored under the load image name of WWENG2 or MNENG2, depending on your hardware. WWENG2 is used for the DECserver 700 or DECserver 900TM hardware, and MNENG2 is used for the DECserver 90TL or DECserver 90M hardware.

The software requires hardware with at least 2 MB of physical memory. To complete the upgrade, all access servers must be aware of the new load image on the access server. Enter the CHANGE SERVER SOFTWARE command.

```
Local> CHANGE SERVER SOFTWARE MNENG2
```

7	To determine if you have Flash RAM installed, enter the following command:

```
Local> SHOW MEMORY CONFIGURATION

Dynamic RAM:                                        4 M bytes

Non-Volatile RAM:                                  32 K bytes

Flash RAM:
   Installed:                                            Yes
   Total size:                                      2 M bytes
   Boot block:                                         Valid
   Load image:
     Name:                                           WWENG2
     Size                                      978148 bytes
     Version                      Vn.n for DS700-xx BLnn-xx
```

8	Do you have Flash RAM?

- If yes, enter the following command to update your Flash RAM from the network. The qualifier, DELAY *nn*, causes the access server to wait *nn* minutes before initializing. This permits any existing users time to log out. You need to wait *nn* minutes before continuing.

```
Local> INITIALIZE FROM ETHERNET UPDATE FLASHRAM [DELAY
10]
```

- If no, enter the following command to update your load image from the network:

```
Local> INITIALIZE FROM ETHERNET [DELAY 10]
```

Downloading the Software Image

Notes

The FROM and UPDATE options are supported in DECserver Network Access
Software Version 1.0 and later. Load images WWENG1 and MNENG1 do not support
the FROM and UPDATE options.

Verifying the Download

Procedure

To verify the download, do the following:

Step	Action
1	If you are using the MOP protocol, use the **/etc/ccr -n** *node-name* command to connect to the access server. Substitute your access server node name for *node-name*. If a maintenance password has been defined by the access server manager, use the following command: **/etc/ccr -n** *node-name* **-p** *password*. Substitute your access server maintenance password for *password*. `# `**`/etc/ccr n`** *`node-name`* `ccr: Remote console reserved`

2	If you are using the BOOTP protocol, enter the **telnet** *Internet-address* command to connect to the Telnet remote console. Substitute the internet address of the access server for *nn.nn.nn.nn*.
	
	`peach> `**`telnet`** *`nn.nn.nn.nn`*
	`Trying `*`nn.nn.nn.nn`*`...`
	`Connected to `*`nn.nn.nn.nn`*`.`
	`Escape character is "^]".`

3	Press the Return key to get the access server prompt, then enter the login password. ACCESS is the access server default login password.
	
	`# `**`ACCESS`**` (not echoed)`
	`Network Access SW Vn.n for DS700-08 (BLxxx-xxx)`
	
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	`Rights Reserved`
	
	`Please type HELP if you need assistance`

4	Read the identification message to ensure that the correct version of the DECserver Network Access Software was downloaded.

Verifying the Download

Step	Action
5	If you are using the MOP protocol, press Ctrl/D to log out of the access server.
6	If you are using the BOOTP protocol, enter the logout command to log out of the access server.
7	Log out of the system.

If this installation is a software upgrade, either you or the network manager can now reload all existing access servers.

Completing the Installation

Steps

To complete the installation, do the following:

Step	Action
1	Optionally, install the software kit on at least two load hosts. DIGITAL recommends that you have one load host for every ten access servers.
2	Inform the system or network manager that the installation is complete.
3	Give this guide and other software documents to the person who manages the access server.

Problem Solving Information

If you have any problems installing the software, refer to the *Network Access Server Problem Solving* guide.

Next Step

After you complete the installation, you are ready to configure the access server. You can use the Access Server Manager, a PC-based management tool, or the access server's command line interface.

If using the Access Server Manager, see the application's online help for instructions. If using the command line interface, see the *Network Access Server Management* and the *Network Access Server Command Reference* guides for instructions.

Chapter 6

UNIX Installation

Overview

Introduction

This chapter describes how to install the DECserver Network Access Software onto a generic, third-party UNIX system. This system is the load host.

In This Chapter

This chapter contains the following topics:

- Preparing for Installation

- Extracting the Installation Files from the Distribution Media

- Building Carnegie Mellon University (CMU) BOOTP

- Installing the Software on the Load Host

- Configuring the Load Host

- Downloading the Software Image

- Verifying the Software Download

- Completing the Installation

Preparing for Installation

Pre-Installation Steps

Before you install the software on your load host, perform the following steps:

- Print and read the release notes.

- If you have a new DECserver unit with Flash RAM, follow the procedure to update the DECserver database. See the Configuring the Load Host section.

- Verify that you have superuser privileges.

- Back up the system disk before installing the software.

Time Required

Allow approximately 10 to 30 minutes to complete the installation procedure on your UNIX system.

Extracting the Installation Files from the Distribution Media

Procedure

Before you perform the installation procedure, you need to extract the appropriate files from the distribution media. Do the following:

Step	Action
1	Log in to the system as superuser.
2	Mount the CD-ROM drive as an ISO 9660 volume using a command syntax similar to the following (this example shows the mount command for systems that support Rock Ridge Extensions):
	`# `**`mount -rs hsfs -o noversion /dev /dir`**
	The */dev* variable is the device name on your system.
	The */dir* variable is a directory in which you are mounting the CD-ROM file system.
	Rock Ridge Extensions Support: Not all UNIX systems support the Rock Ridge Extensions. On Solaris systems, the system automatically mounts the CD-ROM. Consult your system's mount documentation for instructions.
3	Create a directory to contain the installation files using the following command syntax:
	`# `**`mkdir /temp-dir`**
	The */temp-dir* variable is the name of the temporary file where you plan to dearchive the installation tar file.
4	Create a directory to contain the images that you downline load using the following command syntax:
	`# `**`mkdir /tftpboot`** or **`mkdir /usr/tftpboot`**
	The /tftpboot directory contains files that the BOOTP/TFTP services use to handle downline load requests from network clients. An access server uses BOOTP/TFTP to load its image from a UNIX host.
5	Change to the directory you created. For example:
	`# `**`cd /temp-dir`**

Step	Action

6	Extract the files from the media using one of the following command syntaxes:
	
	`# tar -xvf `*`/dir`*`/UNIX/UNIX.TAR`
	 or
	`# tar -xvf `*`/dir`*`/UNIX/unix.tar`
	
	This preserves the case on systems without Rock Ridge Extensions.
	
	The *`/dir`* variable is a directory in which you mounted the CD-ROM file system.

7	Invoke the installation shell script by entering:
	
	`# `**`./INSTALL`**` or `**`./install`**
	
	You need to reference the shell script as ./INSTALL or ./install so that you do not invoke a system utility of the same name (as you might on Solaris systems). The installation operation requires a C compiler.
	
	If your system does not have a compiler, linker, and stripper, you can receive an error message similar to the following:
	
	`./.INSTALL:  cc: not found`
	`./.INSTALL:  strip: not found`
	`chmod: WARNING: can't access /bin/_addDECserver`

8	Change the directory: `# `**`cd ..`**
9	Delete your temporary directory using the following command syntax: `# `**`rm -fr `*`/temp-dir`**

Building Carnegie Mellon University (CMU) BOOTP

Introduction

Your system might not have BOOTP. If not, you can build BOOTP from the CMU BOOTP sources supplied with the software distribution media, as described in the section, Making a New Version of the CMU BOOTP.

If your system has BOOTP, refer to the section, Determining the Status of the BOOTP and TFTP Daemons to determine the status of the BOOTP daemon.

The CMU BOOTP sources supplied with the software distribution media are designed for BSD-style UNIX systems and are not compatible with non-BSD style UNIX systems. Some ULTRIX and Sun systems might have an older version of the CMU BOOTP program.

You should update that version with the new version supplied with the software distribution media because it uses the **/etc/bootptab** file format that the **/etc/upd_DECserver** command expects. The CMU BOOTP needs no arguments when invoked with **inetd.conf**.

Making a New Version of the CMU BOOTP

The software supplied with this kit is tailored to run with the CMU version of the **/etc/bootptab** file, which is the configuration file for the BOOTP daemon. A version of the BOOTP daemon is supplied with the software kit that is compatible with that specific style of the **/etc/bootptab** file.

To make this version of bootpd, perform the following steps:

Step	Action
1	Change to the cmubootp directory as follows: `# cd ./cmubootp`
2	Depending on your platform, enter the following command:

Building Carnegie Mellon University (CMU) BOOTP

Step	Action	
	Platform	**Command**
	Sun OS	**# make -f Makefile.SUN**
	SCO UNIX	**# make -f Makefile.SCO**
	IBM AIX	**# make -f Makefile.IBM**
	HP UX	**# make -f Makefile.HP**
	OSF/1	**# make -f Makefile.OSF**
	All others	**# make**
3	Copy the new executable image to **/etc** as follows:	

```
# cp bootpd /etc/bootpd
```

If you do not have an **/etc/bootptab** file, copy the **bootptab** file supplied with the kit to **/etc**. If you have a **bootptab** file supplied with the kit, merge this file with the existing one in **/etc/bootptab**.

Determining the Status of the BOOTP and TFTP Daemons

The following guidelines for the BOOTP and TFTP daemons are generic. If your UNIX reference pages conflict with these, follow the guidelines in the reference pages.

Step	Action
1	Determine if a group guest exists by entering one of the following commands:

```
# grep guest /etc/group
# cat /etc/group
```

If a group guest does not exist, edit the **/etc/group** file and add the member TFTP to that group. For example:

```
guest::32123:tftp
```

Step	Action
2	Edit the **/etc/passwd** file and add the user TFTP.

The file password should be an asterisk (*). The default directory should be tftpboot, and the shell should be /bin/false. For example:

```
tftp:*:32123:32123:tftp server:/tftpboot:/bin/false
```

Step	Action
3	Enter the grep command to see if the **/etc/services** file contains the following lines: bootp 67/udp # Bootstrap protocol server or bootps 67/udp # Bootstrap protocol server bootpc 68/udp # Bootstrap protocol client tftp 69/udp # ARPA Trivial File Protocol Transfer If these lines are missing, add them to the file.

4	Check the **/etc/inetd.conf** file for a line containing TFTP. Make sure this line is not preceded by a pound sign (#). For example:
	
	`tftp dgram udp wait nobody /usr/etc/initftpd initftpd`
	
	Restricted TFTP: Digital recommends that you use restricted TFTP for security reasons. For the rest of this document, examples are given under the assumption that restricted TFTP is used, with a restricted path called **/tftpboot**. It is not required to call the TFTP restricted path **/tftpboot.**
	
	If you use the restricted TFTP server with a path, an example of a tftp entry is as follows:
	
	`tftp dgram udp wait nobody /usr/etc/initftpd initftpd -r /tftpboot`
	
	The -r option ensures that the boot file can be accessed only from the **/tftpboot** directory.

5	The **inetd.conf** file should also contain one of the following lines for BOOTP: `bootp dgram udp wait root /etc/bootpd bootpd or bootps dgram udp wait root /etc/bootpd bootpd` If this line is missing, add it to the **inetd.conf** file using bootp or bootps as determined by the entry in your **/etc/services** file. Refer to step 3.
6	If you have updated the **inetd.conf** file, restart **inetd**.
7	Enter the ps command to verify that inetd is running. For example: `# `**`ps -aux	grep inetd`** For more information on the **inetd** and the **ps** commands, consult your system-specific reference pages.

Installing the Software on the Load Host

Procedure

To install the DECserver Network Access Software on the load host, do the following (the install operation requires a C compiler):

Step	Action

1	Make sure you have a **/tftpboot** directory. If you do not have a **/tftpboot** directory, create one by entering one of the following commands:
	
	`# mkdir /tftpboot`
	`# mkdir /usr/tftpboot`
	
	Installing in Other Directories: If you want to install the software in a directory other than **/tftpboot**, you can create a symbolic link from **/tftpboot** to the actual location of the files. For example:
	
	`# ln -s /usr/tftpboot /tftpboot`
	
	Using tftp with restricted path: If you are running tftp with restricted path **/tftpboot**, enter the following commands. Note the period (.) in the second line.
	
	`# cd /tftpboot`
	`# ln -s . tftpboot`
	`# cd /`
	
	Not all UNIX systems support symbolic links.

2	After you have extracted the installation files from the distribution media and have ensured that the BOOTP and TFTP daemons are installed and running, enter the following command, which does not display any text: `# ./INSTALL`

3	Remove the temporary directory that you used when you dearchived the installation tar file. Use the following commands:
	
	`# cd ..`
	`# rm -fr /temp-dir`
	
	When you complete the installation procedure, you can add an access server to the database as described in the section, Configuring the Load Host.

Configuring the Load Host

Procedure

To configure the load host, do the following:

Step	Action
1	Update the DECserver database. You need the following information to add a DECserver access server:

                 • Access server node name. The name must be 1 to 16 alphanumeric characters; the first character must be alphabetic. Underscores are not permitted. DECserver node names are case sensitive.

                 • Access server type (DS700, DS90TL, DS90M, or DS900TM). For the DECserver 900GM, use DS900TM.

                 • Access server Ethernet address (printed on the back of the hardware).

                 • Access server Internet address (assigned by the network administrator).

Optionally, when you update the database, you can specify an alternate load image name, a gateway address, and subnet mask, if applicable.

To add a DECserver to the database, enter the **/etc/add_DECserver** command. To get help, type a question mark (?).

Add Example:

```
# /etc/add_DECserver
DECserver Node Name ?              myds
DECserver DS700 or DS90TL ?        DS90TL
DECserver Load Image <MNENG1> ?
DECserver Ethernet Address ?       08-00-2B-FC-01-76
DECserver Internet Address ?       192.12.79.6
DECserver Gateway Address ?        192.12.79.3 (optional)
DECserver Subnet Mask     ?        255.255.255.0
(optional)
```

Alternative Method: You can also enter the **/etc/add_DECserver** command with the appropriate arguments on a single command line. The format is as follows:

```
/etc/add_DECserver node server_type load_image
ethernet_address\ internet_address
[gateway_address][subnet_mask]
```

Step	Action
2	Check to see if a message displays the location of a dump file. For example: `DECserver Dump File:  /tftpboot/MN08002BFC0176` Do not delete the previous file because it disables dumps. Also, do not delete any files in the **/tftpboot** directory ending in .dump, if present.
3	After you have added one or more access servers, enter the **/etc/ upd_DECserver** command to put the access servers into the **/etc/ bootptab** database.

You can compare the file you have in **/etc/bootptab** with the sample file in the software distribution kit (**./cmubootp/bootptab**). If the format of the entries is compatible, enter the **/etc/upd_DECserver** command.

Non-CMU Files

If you are running a BOOTP server with a file format different from the CMU **/etc/ bootptab** file, you need to manually convert the database file to the format you are using. The database file to convert is in the **/etc/DECservers** file. The **./cmubootp/ bootptab** file describes the format of the entries.

Restricted and Unrestricted Mode TFTP

If the TFTP server runs in restricted mode, do not use the home directory field in the **/ etc/bootptab** file unless the concatenation of the TFTP restricted path, the home directory path, and the boot file generate a valid (existing) file specification.

If the TFTP server runs in a nonrestricted mode, then the concatenation of the home directory path and the boot file must generate a valid (existing) file specification.

In either case, restricted or nonrestricted mode, the boot file name (absolute or relative) must not exceed 31 characters. However, the concatenation of the home directory and the boot file can exceed 31 characters, with an upper limit of 128 characters, as defined in the bootstrap protocol.

Displaying the DECserver Database

To display the contents of the DECserver database, enter the following command:

```
# /etc/list_DECserver
myds:  tc=DS.default:  ha=08002BFC0176:  ip=1
2.12.79.6:  bf=MNENG1:  gw=192.12.79.3:  sm=255.255.255.0
```

Removing Access Servers

To remove an access server from the database, do the following:

Step	Action
1	Enter the following command: `# /etc/rem_DECserver DECserver_name`
2	After you have removed one or more access servers, enter the **/etc/ upd_DECserver** command to remove the access servers from the **/etc/ bootptab** database.

Downloading the Software Image

Introduction

When you turn on the power to the access server, downloading of the software image occurs automatically.

Accessing the Remote Console from the Load Host

If you want the access server to run the most recently installed software, reload the software from the load host by doing the following:

Step	Action
1	Enter the **telnet** *internet-address* command to connect to the Telnet remote console. Substitute the Internet address of the access server for *nn.nn.nn.nn*. peach# **telnet** *nn.nn.nn.nn* Trying *nn.nn.nn.nn*... Connected to *nn.nn.nn.nn*. Escape character is "^]".
2	Press the Return key to get the access server prompt, then enter the login password. ACCESS is the default login password. # **ACCESS** (not echoed) DECserver 90TL#xx Communications Server Vn.n (BLxx) – LAT V5.1 (c) Copyright 1997, Digital Equipment Corporation – All Rights Reserved Please type HELP if you need assistance
3	Enter your user name (any string of 1 through 16 characters). Enter username> **swinstaller**
4	Enter the SET PRIVILEGED command and enter the password. SYSTEM is the default password. Local> **SET PRIVILEGED** Password> **SYSTEM** (not echoed)

Step	Action
5	To determine if you have Flash RAM installed, enter the following command:

```
Local> SHOW MEMORY CONFIGURATION
Dynamic RAM:                                 4 M bytes
Non-Volatile RAM:                           32 K bytes
Flash RAM:
  Installed:                                      Yes
  Total size:                               1 M bytes
  Boot block:                                   Valid
  Load image:
    Name:                                      MNENG2
    Size                               978148 bytes
    Version                    Vn.n for DS90M BLnn-xx
```

Step	Action
6	Do you have flash RAM?

- If yes, enter the following command to update your flash RAM from the network. The qualifier, DELAY *nn*, causes the access server to wait *nn* minutes before initializing. This permits any existing users time to log out. You need to wait *nn* minutes before continuing.

  ```
  Local> INITIAL FROM ETHERNET UPDATE FLASHRAM [DELAY 10]
  ```

- If no, enter the following command to update your load image from the network:

  ```
  Local> INITIALIZE FROM ETHERNET [DELAY 10]
  ```

FROM and UPDATE Options: The FROM and UPDATE options are supported in DECserver Network Access Software Version 1.0 and later. Load images WWENG1 and MNENG1 do not support the FROM and UPDATE options.

Memory Requirements

DECserver Network Access Software Version 2.0 requires at least 4 MB of RAM in the DECserver hardware platform.

Verifying the Software Download

To verify the downline load, do the following:

Step	Action

1	Enter the **telnet** *internet-address* command to connect to the Telnet remote console. Substitute the Internet address of the access server for *nn.nn.nn.nn*.
	
	`peach# `**`telnet nn.nn.nn.nn`**
	`Trying nn.nn.nn.nn...`
	`Connected to nn.nn.nn.nn. Escape character is "^]".`

2	Press the Return key to get the access server prompt, then enter the login password. ACCESS is the access server default login password.
	
	`# `**`ACCESS`**` (not echoed)`
	`Network Access SW Vn.n for DS90TL-xx  (BLxxx-xxx)`
	`(c) Copyright 1997, Digital Equipment Corporation - All Rights Reserved`
	`Please type HELP if you need assistance`

3	Read the identification message to ensure that the correct version of the DECserver Network Access Software was downline loaded.
4	Enter the logout command to log out of the access server. `Local> `**`logout`**
5	Enter the logout command to log out of the system. `peach> `**`logout`**

If this installation is a software upgrade, either you or the network manager can now reload all existing access servers.

Completing the Installation

Steps

To complete the installation, do the following:

Step	Action
1	Optionally, you should install the software kit on at least two load hosts.
2	Inform the system or network manager that the installation is complete.
3	Give this guide and other software documents to the person who manages the access server.
4	Save any MIB files that you want to keep for use with network management in the **./mibs** directory.
5	Delete the kit files if you no longer need them.

Problem Solving Information

If you have any problems installing the software, refer to the *Network Access Server Problem Solving* guide.

Next Step

After you complete the installation, you are ready to configure the access server. You can use the Access Server Manager, a PC-based management tool, or the access server's command line interface.

If using the Access Server Manager, see the application's online help for instructions. If using the command line interface, see the *Network Access Server Management* and the *Network Access Server Command Reference* books for instructions.

Appendix A

Distribution Files

Overview

Introduction

This appendix lists the DECserver Network Access Software distribution files for the DECserver 700, DECserver 90TL, DECserver 90M, DECserver 900TM, DECserver 900GM, DECserver 900GMX, and DECserver 900MC access servers.

In This Appendix

This appendix contains the following topics:

- OpenVMS Distribution Files

- DIGITAL UNIX Distribution Files

- UNIX Distribution Files

About File Names

Most of the files listed are common to the above-listed products. If an asterisk (*) is in the file name, it means the number of your hardware module should be inserted (90, 900, or 700). An *xx* in a file name represents the current software version.

OpenVMS Distribution Files

OpenVMS Distribution File Listing

The following table lists the OpenVMS distribution files:

File Name	Description
SYS$TEST:DNAS$IVP.COM	Installation Verification Procedure.
The following files are located in SYS$COMMON:[DECSERVER]:	
DSV$CONFIGURE.COM	Configuration procedure.
NA*_0*xx*_CRASH_DISPLAY.COM	Crash dump identification procedure.
WWENG1.SYS	DECserver 700 Version 1.1 (1 MB).
WWENG2.SYS	DECserver Network Access Software Version 2.*n* for DECserver 700s or DECserver 900s with at least 4 MB.
MNENG1.SYS	DECserver Network Access Software Version 1.1 for DECserver 90TL and DECserver 90M access servers with 1 MB.
MNENG2.SYS	DECserver Network Access Software Version 2.*n* for DECserver 90TLs or DECserver 90Ms with at least 4 MB.
TSM$ADD_LOCAL_SERVICE.COM	File used by the TSM software.
TSM$NA*_V*xx*_ADD_TYPE.COM	File used by the TSM software.
TSM$DEDIC_SERV_PRINTER.COM	File used by the TSM software.
TSM$DEDIC_SERV_TERM.COM	File used by the TSM software.
TSM$NA700-8_V*xx*_DEFAULTS.COM	File used by the TSM software.
TSM$NA700-16_V*xx*_DEFAULTS.COM	File used by the TSM software.
TSM$NA900_V*xx*_DEFAULTS.COM	File used by the TSM software.
TSM$NA900-MC_V*xx*_DEFAULTS.COM	File used by the TSM software.

File Name	Description
TSM$NA90_V*xx*_DEFAULTS.COM	File used by the TSM software for the DECserver 90TL or DECserver 90M access servers.
TSM$DSR_DTR_TERM.COM	File used by the TSM software.
TSM$NA_V*xx*_GET_CHAR.COM	File used by the TSM software.
TSM$HOST_INIT_PRINTER.COM	File used by the TSM software.
TSM$PC_TERM_OR_SERV.COM	File used by the TSM software.
TSM$NA700-8_V*xx*_PORT_DEFAULT.COM	File used by the TSM software.
TSM$NA700-16_V*xx*_PORT_DEFAULT.COM	File used by the TSM software.
TSM$NA900_V*xx*_PORT_DEFAULT.COM	File used by the TSM software for the DECserver 900 access server.
TSM$NA900-MC_V*xx*_PORT_DEFAULT.COM	File used by the TSM software for the DECserver 900MC access server.
TSM$NA90_V*xx*_PORT_DEFAULT.COM	File used by the TSM software for the DECserver 90TL or DECserver 90M access servers.
RFC-1158.TXT	SNMP MIB II user reference file.
RFC-1213.TXT	SNMP MIB II user reference file (obsoletes RFC1158.TXT).
RFC-1243.TXT	SNMP MIP: AppleTalk.
RFC-1243_ENROLL.TXT	Text for enrolling into an SNMP management station (edited version of RFC1243.TXT).
RFC-1284.TXT	SNMP MIB: Definitions of managed objects for Ethernet-like interfaces.
RFC-1284_ENROLL.TXT	Text for enrolling into an SNMP management station (edited version of RFC1284.TXT).
RFC-1316.TXT	SNMP MIB: Definitions of managed objects for character stream devices.

OpenVMS Distribution Files

File Name	Description
RFC-1316_ENROLL.TXT	Text for enrolling into an SNMP management station (edited version of RFC1316.TXT).
RFC-1317.TXT	SNMP MIB: Definitions of managed objects for RS232-like hardware devices.
RFC-1317_ENROLL.TXT	Text for enrolling into an SNMP management station (edited version of RFC1317.TXT).
RFC-1471.TXT	SNMP MIB: The definitions of managed objects for the Link Control protocol of the Point-to-Point protocol.
RFC-1471_ENROLL.TXT	Text for enrolling into an SNMP management station (edited version of RFC1471.TXT).
RFC-1473	SNMP MIB: The definitions of managed objects for the IP Network Control Protocol of the Point-to-Point protocol.
RFC-1473_ENROLL	Text for enrolling into an SNMP management station (edited version of RFC1473.TXT).
DEC-DECSERVER-ACCOUNTING-MIB.TXT	Accounting MIB for host systems.
DEC-DECSERVER-ACCOUNTING_MIB.HP	Accounting MIB for HP host systems.
DEC-DECSERVER-ACCOUNTING_MIP.SUN	Accounting MIB for Sun host systems.
TELNETFILTER.C	Source file for the host-based software that allows UNIX printing to a Telnet listener on a DECserver access server.
TELNETFILTER.S	Compiled file for the host-based software that allows UNIX printing to a Telnet listener on a DECserver access server.
HARVESTD1-3.TAZ	Compressed tar file for the harvestd utility.
RADIUS_SURVIVAL.TXT	Guide to the access server's RADIUS client implementation.
SNMP_SURVIVAL.TXT	Guide to managing access servers through SNMP.

DIGITAL UNIX Distribution Files

DIGITAL UNIX Distribution Files

The following table lists the DIGITAL UNIX distribution files:

File	Description
/tftpboot directory:	
WWENG1	DECserver 700 Version 1.1 (1MB).
WWENG2	DECserver Network Access Software Version 2.*n* for DECserver 700s or DECserver 900s with at least 2MB.
MNENG1	DECserver 90TL Version 1.1 (1MB).
MNENG2	DECserver Network Access Software Version 2.*n* for DECserver 90Ms or DECserver 90TLs with at least 4 MB.
/usr/opt/DECserver directory:	
addDECserver.c	Source file for a program used in managing the access server database.
add_DECserver	Shell script to add an access server to the database.
bootptab	Sample **/etc/bootptab** file.
DEC-DECserver-accounting-mib.hp	DECserver accounting MIB
DEC-DECserver-accounting-mib.sun	DECserver accounting MIB
DEC-DECserver-accounting-mib.txt	DECserver accounting MIB
harvest.tar.z	harvestd build kit
nrsetup.tar.z	nrsetup build kit
list_DECserver	Shell script to list the contents of the database.
rem_DECserver	Shell script to remove an access server from the database.
upd_DECserver	Shell script to update an **/etc/bootptab** file.
DECspool.c	Sample spooling program.
Release_Notes.txt	Additional technical information.

DIGITAL UNIX Distribution Files

File	Description
README	Additional notes that are not in this document.
rfc-1158.txt	SNMP MIB II user reference file.
rfc-1213.txt	SNMP MIB II user reference file (obsoletes **rfc-1158.txt**).
rfc-1243.txt	SNMP MIP: AppleTalk.
rfc-1243_enroll.txt	Text for enrolling into an SNMP management station (edited version of **rfc-1243.txt**).
rfc-1284.txt	SNMP MIB: Definitions of managed objects for Ethernet-like interfaces.
rfc-1284_enroll.txt	Text for enrolling into an SNMP management station (edited version of **rfc-1284.txt**).
rfc-1316.txt	SNMP MIB: Definitions of managed objects for character stream devices.
rfc-1316_enroll.txt	Text for enrolling into an SNMP management station (edited version of **rfc-1316.txt**).
rfc-1317.txt	SNMP MIB: Definitions of managed objects for RS232-like hardware devices.
rfc-1317_enroll.txt	Text for enrolling into an SNMP management station (edited version of **rfc-1317.txt**).
rfc-1471.txt	SNMP MIB: The definitions of managed objects for the Link Control protocol of the Point-to-Point protocol.
rfc-1471_enroll.txt	Text for enrolling into an SNMP management station (edited version of **rfc-1471.txt**).
rfc-1473	SNMP MIB: The definitions of managed objects for the IP Network Control Protocol of the Point-to-Point protocol.
rfc-1473_enroll.txt	Text for enrolling into an SNMP management station (edited version of **rfc-1473.txt**).
radius_survival.txt	Guide to the access server's RADIUS client implementation.
snmp_survival.txt	Guide to managing access servers through SNMP.
telnetfilter.c	Telnet print filter build kit

File	Description
telnetfilter.s	Telnet print filter build kit for SCO UNIX
/usr/bin directory:	
_addDECserver	Stripped executable file used by **/etc/add_DECserver**
/etc directory:	
add_DECserver	Shell script to add an access server to the database.
bootptab	Sample **/etc/bootptab** file.
list_DECserver	Shell script to list the contents of the database.
upd_DECserver	Shell script to update an **/etc/bootptab** file.
DECservers	Database used by **add_DECserver** and **upd_DECserver.**

UNIX Distribution Files

Refer to the README file for information about UNIX distribution files.

Appendix B

Cabling and Hardware

Overview

Introduction

This appendix lists the recommended cabling hardware for connecting various network devices to your access server.

More Information

For further information, refer to the Site Preparation Guide or User's Guide included with your access server hardware.

Cables and Hardware

Cables and Hardware Table

The following table lists the hardware you need to connect different network devices to your access server:

To Connect:	To DECserver 90M or 90TL (8 port), DECserver 900TM (32 port), or DECserver 700 (16 port)	To DECserver 700 (8 port)
Terminal/printer with MMJ port	BN24H-*xx* cable	H8575-A adapter and BC16E-*xx* cable
Terminal/printer with DB25 male port	H8575-A adapter and BN24H-*xx* cable	BC17D-*xx* (10-wire) cable or BC22D-*xx* (6-wire) cable
Terminal/printer with DB9 male port	H8575-B adapter and BN24H-*xx* cable	H8575-A and H8571-J adapters and BC16E-*xx* cable
PC communication interface with DB9 male port	H8585-AA adapter and BN25G-*xx* cable	H8575-A and H8571-J adapters and BC16E-*xx* cable
Modem using RI-DCD-DSRS-DTR signals (typically <9600 baud) with DB25 female port	H8585-AB adapter and BN25G-*xx* cable	BC22E-*xx* (10-wire) cable or BC22F-*xx* (25-wire) cable
Modem using CTS-DSR-RTS-DTR signals (typically =>9600 baud) with DB25 female port	H8585-AC adapter and BN25G-*xx* cable	BC22E-*xx* (10-wire) cable or BC22F-*xx* (25-wire) cable
Non-DIGITAL systems with DB25 male ports (reverse-LAT configuration)	N/A	BC22R-*xx* cable

Appendix C

Upgrading Access Server Software

Overview

Introduction

This appendix describes how to upgrade your access server (with or without Flash RAM) with the latest DECserver Network Access Software using the PC-based management tools. This procedure:

- Turns on power to the access server and loads the latest software upgrade while preserving your current access server configuration. This can also upgrade your Flash RAM.

- Assigns an Internet address to the access server if necessary.

- Prepares the access server's default Telnet remote console for connection.

In This Appendix

This appendix contains the following topic:

Upgrade Procedure

Upgrade Procedure

Procedure

Do the following to upgrade your access server:

Step	Action
1	Start the Access Server Loader utility on the PC management station.
2	Click on Setup and enter the host name, Ethernet address, Internet address, Internet address, subnet mask, gateway Internet address, and image file name for the access server in the Clients dialog box. If the access server already has an Internet address assigned, you do not need to change it.
	If you decide to change the Internet address, enter the new IP address in the Clients dialog box and manually change the address on the access server before issuing the INIT command described in step 11.
3	Click on the Files tab and verify that one of the request file names (default is MNENG2 and WWENG2) corresponds to the request file name that the access server requests. The access server default request file names are MNENG2 for the DECserver 90M and 90TL, WWENG2 for others. If the file names do not match, add an entry on the Files dialog box with a request file name that matches the file the access server requests.
4	Disable other network load hosts that could load the access server (this is optional). This ensures that the NetRider Loader loads the access server with the latest image. Alternatively, you may want to load the access server upgrade image on the other load hosts.
5	Start the NetRider Loader BOOTP and TFTP servers by clicking on the server On/Off buttons. When on, the button lights are green.
6	If necessary, install the modem(s) on the desired access server ports using the appropriate modem cable (see the documentation included with your modem).
7	If you did not preconfigure your modem for dial-in previously, reset it to factory defaults.
8	Turn on the power to the modem. If power to the the access server is off, turn on the power and wait for it to finish rebooting.
9	Connect to the server console by means of a directly attached terminal, MOP, or Telnet.

Step	Action
10	Make sure that the default Telnet remote console is enabled in the permanent database by issuing the following command: `Local>` **`PURGE TELNET LISTENER 23`**
11	To load the access server with the upgraded image, use one of the following commands: **For an access server with Flash RAM** `Local>`**`INIT FROM ETHERNET UPDATE FLASHRAM DELAY 0`** **For an access server without Flash RAM** (or an access server with Flash RAM that you do not want to permanently upgrade) `Local>` **`INIT FROM ETHERNET DELAY 0`** To continue installation and configuration, refer to Installation and Configuration Process in Chapter 2.