OpenVMS Alpha Version 7.2 Upgrade and Installation Manual

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This document contains step-by-step instructions for installing and upgrading the OpenVMS Alpha operating system on Alpha computers. It also includes information about booting, shutdown, backup, and licensing procedures.

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The OpenVMS documentation set is available on CD–ROM.

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Preface

Intended Audience

This manual is intended for anyone responsible for installing or upgrading the OpenVMS Alpha operating system and for the startup, shutdown, and backup operations required on Alpha computers running this software.

When to Use This Manual

If you received factory-installed software (FIS) with your Alpha computer, refer to that user documentation to start up your system for the first time. Use this manual if you need to install or upgrade the OpenVMS Alpha operating system software yourself or if you need to perform certain startup, shutdown, or backup operations.

Document Structure

This manual is organized as follows:

- Chapter 1 defines key terms and provides information about hardware and software components. Review this chapter before performing any installation or upgrade.
- Chapter 2 provides preliminary information about installing the operating system in an OpenVMS Cluster environment.
- Chapter 3 describes how to install the operating system.
- Chapter 4 describes the tasks you must perform after installing the operating system.
- Chapter 5 describes how to prepare your system for an upgrade.
- Chapter 6 supplements Chapter 5 with additional tasks you must perform before upgrading an OpenVMS Cluster system.
- Chapter 7 describes how to upgrade the operating system.
- Chapter 8 describes the tasks you must perform after upgrading the operating system.
- Appendix A contains instructions for halting the system, booting the operating system CD–ROM and the system disk, using console commands to set system parameters, using the Writeboot utility, and invoking system shutdown procedures.
- Appendix B describes how to back up and restore the system disk.
- Appendix C contains supplementary information about registering licenses.
- Appendix D describes how to prepare your OpenVMS system and your PC to run the OpenVMS Management Station server and client software.

- Appendix E explains how to remove the OpenVMS Alpha operating system from your disk.
- The Glossary defines key terms used in this manual.

Related Documents

Before installing, upgrading, or using the OpenVMS Alpha operating system on your Alpha computer, be sure you have access to the following documents:

- All cover letters included with your kit.
- The *OpenVMS Version 7.2 Release Notes*, which provides important supplementary information about the OpenVMS Alpha operating system.
- *OpenVMS Version 7.2 New Features Manual*, which describes enhancements and new support included in the OpenVMS Version 7.2 operating system.
- *OpenVMS Cluster Systems* and *Guidelines for OpenVMS Cluster Configurations*, if you plan to install your system in an OpenVMS Cluster environment.
- The most recent version of the *DECwindows Motif for OpenVMS Installation Guide* and *Managing DECwindows Motif for OpenVMS Systems* (if you plan to install and customize DECwindows Motif for OpenVMS Alpha software).
- The following networking software documents (if you plan to install and configure DECnet-Plus, DECnet Phase IV, or DIGITAL TCP/IP Services for OpenVMS software):
  - *DECnet-Plus for OpenVMS Installation and Basic Configuration*
  - *DECnet for OpenVMS Guide to Networking*
  - *DIGITAL TCP/IP Services for OpenVMS Installation and Configuration*

  Documentation for the networking products listed above are included on the OpenVMS Online Documentation CD–ROM. Hardcopy documentation must be purchased separately.
- The hardware manuals that are supplied with your Alpha computer. These manuals provide detailed information about your system hardware, including the operation of the system unit, the drives, and the monitor.

During the course of installing, upgrading, or using the OpenVMS Alpha operating system on your Alpha computer, you might need to refer to the following documents as well:

- *OpenVMS License Management Utility Manual*, which contains detailed information about registering your software licenses.
- *OpenVMS System Manager's Manual* and the *OpenVMS System Management Utilities Reference Manual*, which contain information about system management operations and utilities that you might need to use when you install, upgrade, customize, and maintain your OpenVMS Alpha system. The *OpenVMS System Management Utilities Reference Manual: M–Z* provides complete information about using the POLYCENTER Software Installation utility PRODUCT command to add or remove files, install other software, and related operations.
- *Volume Shadowing for OpenVMS*, which you might need if you are installing or upgrading the OpenVMS Alpha operating system on a shadowed system disk.

- *OpenVMS Management Station Overview and Release Notes*, which provides information about getting started, setting up, and using OpenVMS Management Station.

For additional information on the Open Systems Software Group (OSSG) products and services, access the following OpenVMS World Wide Web address:

`http://www.openvms.digital.com`

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`http://www.openvms.digital.com:81/`

If you need help deciding which documentation best meets your needs, call 800-DIGITAL (800-344-4825).

Conventions

VMScluster systems are now referred to as OpenVMS Cluster systems. Unless otherwise specified, references to OpenVMS Clusters or clusters in this document are synonymous with VMSclusters.

In this manual, every use of DECwindows and DECwindows Motif refers to DECwindows Motif for OpenVMS software.

The following conventions are also used in this manual:

Ctrl/*x*	A sequence such as Ctrl/*x* indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
Return	In examples, a key name enclosed in a box indicates that you press a key on the keyboard. (In text, a key name is not enclosed in a box.) In the HTML version of this document, this convention appears as brackets, rather than a box.

. . .	A horizontal ellipsis in examples indicate one of the following possibilities: • Additional optional arguments in a statement have been omitted. • The preceding item or items can be repeated one or more times. • Additional parameters, values, or other information can be entered.
. . .	A vertical ellipsis indicate the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
( )	In command format descriptions, parentheses indicate that you must enclose the options in parentheses if you choose more than one.
[ ]	In command format descriptions, brackets indicate optional elements. You can choose one, none, or all of the options. (Brackets are not optional, however, in the syntax of a directory name in an OpenVMS file specification or in the syntax of a substring specification in an assignment statement.)
{ }	In command format descriptions, braces indicate required elements; you must choose one of the options listed.
bold text	This text style represents the introduction of a new term or the name of an argument, an attribute, or a reason.
italic text	Italic text indicates important information, complete titles of manuals, or variables. Variables include information that varies in system output (Internal error *number*), in command lines (/PRODUCER=*name*), and in command parameters in text (where *dd* represents the predefined code for the device type).
UPPERCASE TEXT	Uppercase text indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
`Monospace text`	Monospace type indicates code examples and interactive screen displays. In the C programming language, monospace type in text identifies the following elements: keywords, the names of independently compiled external functions and files, syntax summaries, and references to variables or identifiers introduced in an example.
-	A hyphen at the end of a command format description, command line, or code line indicates that the command or statement continues on the following line.
numbers	All numbers in text are assumed to be decimal unless otherwise noted. Nondecimal radixes — binary, octal, or hexadecimal — are explicitly indicated.

1
Getting Started

This chapter defines key terms and describes preliminary procedures you must perform before an installation or upgrade.

1.1 Key Terms

The following are a few key terms you need to know before you install or upgrade the system:

Term	Definition
Operating system CD–ROM	The CD–ROM containing the OpenVMS Alpha operating system.
HS*x* device	A self-contained, intelligent, mass storage subsystem that lets computers in an OpenVMS Cluster environment share disks. The disk on which you install or upgrade the operating system can be connected to one of these systems (for example, an HSC or HSD).
InfoServer	A general-purpose disk storage server that allows you to use the operating system CD–ROM to install the operating system on remote client systems connected to the same local area network (LAN).
Local drive	A drive, such as an RRD42 CD–ROM drive, that is connected directly to an Alpha computer. If you have a standalone Alpha computer, it is likely that all drives connected to the system are local drives.
Source drive	The drive that holds the operating system CD–ROM during the upgrade or installation.
System disk	The disk that contains (or will contain) the OpenVMS Alpha operating system. The installation or upgrade procedure transfers the OpenVMS Alpha operating system from the operating system CD–ROM on the source drive to the system disk.
Target drive	The drive that holds the system disk during the upgrade or installation.

1.2 Examining Software and Hardware Components

Before beginning an installation or upgrade, be sure you have all the required hardware and software components, as described in the following sections.

1.2.1 Hardware Components

Before you begin an installation or upgrade, do the following:

- Be sure the hardware has been installed and checked for proper operation. For detailed information, see the hardware manuals you received with your Alpha computer.
- Be sure you know how to turn on and operate the components of your system, including the system unit, console, monitor, drives, terminals, and printers. If necessary, read the hardware manuals that came with these components.

- Set up your system to record the installation procedure on either a hardcopy terminal or a printer attached to the console terminal. (See your hardware manuals for more details about connecting those components to your system.) If you do not do this, the screen messages will be lost. You will need a transcript in case there is a problem during the installation.

1.2.2 Software Components

Before you begin an installation or upgrade, do the following:

- Be sure you have all the items listed on the bill of materials in the distribution kit. If your distribution kit is incomplete, notify your Compaq support representative and request priority shipment of any missing items.
- Before installing the OpenVMS Alpha operating system software, review all cover letters and release notes.

1.2.3 Operating System CD–ROM

Included in your kit is the OpenVMS Alpha operating system CD–ROM, which you use to install or upgrade the operating system, or to perform operations such as backing up the system disk. The CD–ROM is labeled similar to the following:

CD–ROM Label:	OpenVMS Alpha V7.2 Operating System
Volume Label:	ALPHA072

Note

The *volume label* is the machine-readable name that the OpenVMS Alpha operating system and InfoServer systems use to access the CD–ROM.

1.2.4 Firmware Revision Checking

OpenVMS Alpha Version 7.2 provides enhanced firmware checking for systems during a boot operation. When you boot the OpenVMS Alpha operating system CD–ROM, the system automatically checks the version of console firmware, which includes PALcode, that is running on your computer. The system also provides more explicit information about how to upgrade the firmware. Previously, only the PALcode version was checked and the informational messages were less specific.

If you do not have the *required* version of console firmware, the system displays a message similar to the following:

```
%SYSBOOT-F-FIRMREV, Firmware rev. nnn is below the absolute minimum of nnn.
                    Please update your firmware to the recommended revision nnn,
                    which can be found on the firmware CD labeled:
                    Alpha AXP Systems Firmware Update nnn.
```

If you do not have the *recommended* version of console firmware, the system displays a message similar to the following:

```
%SYSBOOT-W-FIRMREV, Firmware rev. nnn is below the recommended minimum of nnn.
                    Please update your firmware to the recommended revision,
                    which can be found on the firmware CD labeled:
                    Alpha AXP Systems Firmware Update nnn.
```

The latest console firmware CD–ROM is included with your kit.

Note

Once you install this version of the OpenVMS Alpha operating system, the firmware check (similar to the previous PALcode check) will occur each time you reboot the system.

1.2.5 Device Naming Conventions

When you perform specific operations, you are asked to specify device names for the source drive and target drive. When specifying those device names, note the following naming conventions:

- When the source drive is a local CD–ROM drive, the device name is similar to the following:

  ```
  DKA400
  ```

- When the source drive is a CD–ROM drive connected to the InfoServer, the device name is *always* the following:

  ```
  DAD1
  ```

- When the target drive is a local disk, the device name is similar to the following:

  ```
  DKA0:
  ```

  Note the following conventions:

  – *DK* is the device code of the boot device.

  – *A* is the boot device controller designation.

  – *0* is the unit number of the boot device.

- On Alpha systems configured in certain OpenVMS Cluster or HS*x* environments, the device naming convention is similar to the following:

  ```
  DUA20.14.0.2.0
  ```

  The values you specify identify components such as the boot device, controller, unit number of the boot device, HS*x* controller node number, and channel numbers. Because these values vary depending on your specific hardware configuration, refer to the owner, operator, and technical service manuals that came with your computer for detailed information.

1.3 Using the Operating System CD–ROM

The following sections describe how you use the operating system CD–ROM to install, upgrade, and modify your system disk.

1.3.1 Using the Menu

The OpenVMS Alpha operating system CD–ROM includes a menu system that allows you to easily upgrade or install the operating system and to perform related operations such as backing up the system disk, installing layered products, and removing or reconfiguring products. This command procedure starts automatically when you boot the OpenVMS Alpha operating system CD–ROM, displaying a menu from which you choose options to perform the following tasks:

- Install or upgrade the operating system from the CD–ROM.
- Display a list of products that can be installed from the CD–ROM.
- Install or upgrade layered products from the CD–ROM.
- Show which products are installed on your system.
- Reconfigure layered products installed on your system.
- Remove products.
- Enter a DCL environment from which you can perform preinstallation or maintenance tasks such as mounting or showing devices and backing up or restoring files on the system disk.
- Shut down the system.

Review the following sections to understand how the menu works. You will then be prepared to choose appropriate menu options when you are asked to do so before, during, and after an installation or upgrade.

1.3.2 Sample Menu Display

The following is a sample display of the menu:

```
    OpenVMS (TM) Alpha Operating System, Version V7.2

    Copyright (c) 1998 Compaq Computer Corporation.  All rights reserved.


    Installing required known files...

    Configuring devices...

    ****************************************************************

    You can install or upgrade the OpenVMS Alpha operating system
    or you can install or upgrade layered products that are included
    on the OpenVMS Alpha operating system CD-ROM.

    You can also execute DCL commands and procedures to perform
    "standalone" tasks, such as backing up the system disk.

    Please choose one of the following:

        1)  Install or upgrade OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?)
```

1.3.3 How the Install or Upgrade Option Works

The OpenVMS Installation and Upgrade implement a POLYCENTER Software Installation (PCSI) utility concept called a **platform**. The OpenVMS Alpha platform contains the OpenVMS Alpha operating system, plus options for certain other products, including DECwindows, DECnet, and DIGITAL TCP/IP services. Including these products in the OpenVMS platform allows you to install or upgrade these products along with the OpenVMS Alpha operating system.

Once you select which of these optional products you want to install, information is retained in the database maintained by the PCSI utility. This information allows future OpenVMS upgrades to select the correct default choices for these optional products.

When you choose the install or upgrade option (1) from the menu, the system asks whether you want to preserve or initialize the system disk. The display is similar to the following:

```
    There are two choices for Installation/Upgrade:

    INITIALIZE - Removes all software and data files that were
        previously on the target disk and installs OpenVMS Alpha.

    PRESERVE -- Installs or upgrades OpenVMS Alpha on the target disk
        and retains all other contents of the target disk.

   * Note: You cannot use PRESERVE to install OpenVMS Alpha on a disk on
        which OpenVMS VAX or any other operating system is installed.

Do you want to INITIALIZE or to PRESERVE? [PRESERVE]
```

1.3.3.1 Specifying the INITIALIZE Option

When you specify the INITIALIZE option, the following operations take place:

- All software and data files that were previously on the target disk are removed.
- The operating system is installed.

Specify the INITIALIZE option and perform a full installation under the following conditions:

- If your Alpha computer is new (it has never had any version of the operating system running on it, including factory-installed software).
- If your Alpha computer is running a version of the OpenVMS Alpha operating system and you want to overwrite the entire contents of the system disk (the operating system, application software, and user files).
- If you want to create a new system disk but keep the old one (if you want to alternate between the two).
- If you are running the OpenVMS Alpha operating system but cannot upgrade. For example, if you changed the names of system directories on the system disk, the upgrade procedure will not work correctly. Therefore, unless you chose to restore the system disk to its original directory structure, you would have to reinstall the operating system.

1.3.3.2 Specifying the PRESERVE Option

When you specify the PRESERVE option, the following operations take place:

IF ...	THEN ...
the OpenVMS Alpha operating system is *not* already installed on the target disk,	the following operations take place: • The operating system is *installed*. • All other contents of the target disk are retained.
the OpenVMS Alpha operating system *is* installed on the target disk,	the operating system is *upgraded*, as follows: • Old operating system files and new files are merged or replaced. • All other contents of the target disk are retained.

Note

If you intend to choose the PRESERVE option (because there are certain files on the disk that you want to retain), Compaq recommends that you first make a backup copy of your system disk. If there is any problem during the installation or upgrade that might affect the integrity of the disk, you will have the backup copy as a safeguard.

If you choose the PRESERVE option and choose a target disk that already contains the OpenVMS Alpha Version 7.2 software, you are provided with the option to either reconfigure or reinstall the OpenVMS Alpha operating system. Reconfigure the operating system if you want to change the options you chose to include when the operating system was installed. Reinstall the operating system if you think that your system files may have become corrupted.

The following message may be displayed:

```
Version V7.2 of the OpenVMS operating system is already installed
on the target disk.  You may choose one of the following actions:

  o Reconfigure the OpenVMS platform.
    This action will allow you to change your selections of which of the
    windowing and network products you included with your OpenVMS operating
    system installation.

  o Reconfigure the OpenVMS operating system.
    This action will allow you to change your choices about which
    options you included for the OpenVMS operating system.

  o Reinstall the OpenVMS operating system.
    This action will cause ALL operating system files to be replaced.
    You can also change your choices about which options you included
    for the OpenVMS operating system.

    Reinstall will take longer than Reconfigure.  Reinstall may be
    appropriate if you suspect that files in the operating system,
    or in the windowing and network products have become corrupted.

If you want to reinstall any of the windowing and network products,
choose "Install or upgrade layered products and patches" (option 3)
from the main menu.

If you want to change your choices about which options you included
for any of the windowing and network products, choose "Reconfigure
installed products" (option 5) from the main menu.
```

1.3.4 How the Layered Products Options Work

After you have installed or upgraded the operating system, you can use the menu to show, install, reconfigure (change previously selected options for a layered product), or remove products as well.

Note

When you boot the OpenVMS operating system CD–ROM and select the option to install layered products, that installation procedure does not run the Installation Verification Procedure (IVP) for layered products. Because the operating system is booted from the CD–ROM and the layered products are installed on a different device (the target drive), the IVPs cannot execute correctly. However, you can run the IVP for each

layered product after you boot the target system (see the layered product installation documents for information on running the IVP).

1.3.5 How the DCL Option Works

When you choose the DCL option (7) from the menu, you can use a *subset* of DCL commands (such as SHOW DEVICE, MOUNT, and BACKUP) to perform specific preinstallation and maintenance operations. Note, however, that this is a restricted DCL environment in that certain DCL commands and utilities will not function as expected because you are booting from read-only or write-locked media and because the full system startup is not performed.

A triple dollar sign system prompt ($$$) indicates that you are in this restricted DCL environment, as shown in the following example:

```
$$$ SHOW DEVICE
```

To exit from the DCL environment and return to the main menu, enter the LOGOUT command.

1.3.6 How the Shutdown Option Works

When you choose the shutdown option (8) from the menu, your system shuts down and you are returned to the console prompt (>>>). The system displays a message similar to the following:

```
Shutting down the system

    SYSTEM SHUTDOWN COMPLETE
```

1.4 What to Do Next

Now that you have reviewed key terms, examined hardware and software requirements, and learned how to use the menu system included on the OpenVMS Alpha operating system CD–ROM, you can do the following:

IF ...	THEN ...
you want to install the operating system in an OpenVMS Cluster environment,	go to Chapter 2.
you want to install the operating system in a nonclustered environment,	go to Chapter 3.
you want to upgrade the operating system in a standalone, Volume Shadowing, or OpenVMS Cluster environment,	go to Chapter 5.
you want only to back up or restore your system disk,	go to Appendix B.

2

Preparing to Install in an OpenVMS Cluster Environment

This chapter contains information that you should review before performing an installation in an OpenVMS Cluster environment.

Before installing the operating system in an OpenVMS Cluster environment, be sure you review any relevant OpenVMS Cluster information, contained in the following documents:

- The cover letters and the software product descriptions included with your distribution kit
- *OpenVMS Version 7.2 New Features Manual*
- *OpenVMS Version 7.2 Release Notes*
- If you are installing the operating system in a DSSI OpenVMS Cluster system, the *DSSI OpenVMS Cluster Installation and Troubleshooting Guide*

Be sure the following sources of information are available as well:

- *OpenVMS Cluster Systems* manual
- *Guidelines for OpenVMS Cluster Configurations* manual
- Your network or system manager

2.1 Mixed-Version Support

OpenVMS Alpha Version 7.2 and OpenVMS VAX Version 7.2 provide two levels of support for mixed-version and mixed-architecture OpenVMS Cluster systems. These two support types are *warranted* and *migration*.

Warranted support means that Compaq has fully qualified the two versions coexisting in an OpenVMS Cluster and will answer all problems identified by customers using these configurations.

Migration support is a superset of the Rolling Upgrade support provided in earlier releases of OpenVMS and is available for mixes that are not warranted. Migration support means that Compaq has qualified the versions for use together in configurations that are migrating in a staged fashion to a newer version of OpenVMS VAX or to OpenVMS Alpha. Problem reports submitted against these configurations will be answered by Compaq. However, in exceptional cases Compaq may request that you move to a warranted configuration as part of answering the problem.

Migration support will help you move to warranted OpenVMS Cluster version mixes with minimal impact on your cluster environment. Table 2–1 shows the level of support provided for all possible version pairings.

Table 2–1 OpenVMS Cluster Warranted and Migration Support for VAX and Alpha

	V6.2-*xxx*	V7.1-*xxx*	V7.2
V6.2	WARRANTED	Migration	Migration
V7.1	Migration	WARRANTED	Migration
V7.2	Migration	Migration	WARRANTED

Note

Compaq does not support the use of Version 7.1 or higher with Version 6.1 (or earlier versions) in an OpenVMS Cluster environment.

2.2 OpenVMS Cluster Information You Will Need

If during the installation you answer YES to the system prompt asking whether your system will be a member of an OpenVMS Cluster, you will need to provide the following information after you boot the system disk:

Required Information	Explanation
Type of configuration	Configuration types (CI, DSSI, SCSI, local area, or mixed-interconnect) are distinguished by the interconnect device that the VAX and Alpha computers in the OpenVMS Cluster use to communicate with one another.
DECnet node name and node address	See the network or system manager to obtain the DECnet node name and node address for the computer on which you are installing the OpenVMS Alpha operating system. If you install DECnet-Plus (Phase V) software and do not plan to use DECnet for OpenVMS (Phase IV) addresses, then you do not need to provide this information.
Allocation class value	During the installation procedure, you will be asked for the allocation class value (ALLOCLASS) of the Alpha computer on which you are installing the OpenVMS Alpha operating system. For example: `Enter a value for this_node ALLOCLASS parameter:` Refer to *OpenVMS Cluster Systems* for the rules on specifying allocation class values. Note that in a mixed-interconnect OpenVMS Cluster environment, the allocation class value cannot be zero if the nodes serve DSSI or CI disks. It must be a value from 1 to 255. This is also true for any Alpha computer that is connected to a dual-pathed disk. After you enter the allocation class value, the installation procedure uses it to automatically set the value of the ALLOCLASS system parameter.
Whether you want a quorum disk	Refer to *OpenVMS Cluster Systems* to help you determine whether you want a quorum disk in the cluster.

Required Information	Explanation
Location of the page and swap files	On a nonclustered system, the page and swap files are on one or more local disks but on a clustered system, the files are on one or more local or clustered disks. See *OpenVMS Cluster Systems* to help you determine where the page and swap files will be located for the system on which you are installing the OpenVMS Alpha operating system software.
Systems that will be MOP[1] servers, disk servers, and tape servers	If you are going to set up either a local area or a mixed-interconnect cluster, you will need to make these determinations.
Cluster group number and cluster password	If you are going to set up a local area cluster or a mixed-interconnect cluster that is LAN-based, use the following rules to determine the cluster group number and password: • Cluster group number — A number in the range from 1 to 4095 or 61440 to 65535 • Cluster password — Must be from 1 to 31 alphanumeric characters in length and can include dollar signs ($) and underscores (_)

[1] Servers that use the DECnet maintenance operation protocol.

2.3 What to Do Next

After you have completed all the tasks in this chapter, go to Chapter 3 to begin the installation.

3

Installing the OpenVMS Alpha Operating System

This chapter describes the following installation tasks:

- Preparing to respond to prompts during the installation
- Installing from the operating system CD–ROM
- Creating the system disk
- Registering licenses
- Selecting operating system components
- Installing layered products
- Booting the new system disk
- Rebooting the system
- Joining an OpenVMS Cluster (optional)
- Running AUTOGEN
- Logging in to the SYSTEM account

Note

Before you install the operating system, the correct version of console firmware should be running on your computer, as described in Section 1.2.4.

3.1 Preparing to Respond to Prompts During the Installation

At different points during the installation, you must respond to prompts asking you to supply specific information. This manual and the Help text available during the installation procedure tell you how to obtain most of this information and how to make decisions when responding to specific prompts.

However, Compaq recommends that you review the following summary before you begin the installation so that you have an understanding beforehand of the types of information you will need to provide.

During the installation, the system will prompt you for the following information:

- The names of the source drive, target drive, and local area network device (if you are booting from an InfoServer system).
- Whether you want to select the INITIALIZE or PRESERVE option (as described in Chapter 1).

- A volume label for the target disk (if you choose not to use the default volume label).
- A password for the SYSTEM account. You will be prompted to enter a password of at least 8 characters (but not exceeding 31 characters).
- Whether you want to join an OpenVMS Cluster system and, if so, what kind (as described in Chapter 2).
- DECnet node name and address (or values for the system parameters, SCSNODE and SCSSYSTEMID).

Note

If you install the DECnet-Plus for OpenVMS Alpha software but want to use addresses compatible with DECnet Phase IV for OpenVMS Alpha software, you still need to provide this information. These settings identify your system by name and number in a DECnet or cluster environment. Note as well that if you supply a DECnet address, the system will automatically calculate the SCSSYSTEMID value. If necessary, see the network or system manager to obtain this information.

- Information listed on Product Authorization Keys (PAKs) for your OpenVMS licenses. To register your licenses, you will need to enter the information listed on the PAK for each license.
- Operating system components that you want to install (including DECwindows and OpenVMS Management Station files). You can install all components by default, or you can select each component individually.

  You can install DECwindows Motif, DIGITAL TCP/IP Services for OpenVMS, and either DECnet-Plus or DECnet Phase IV with the OpenVMS Alpha operating system. If you install DECwindows Motif, you must include the Support for DECwindows components. If you install either implementation of DECnet, you must include the Support for DECnet components. You must also include these components if you later plan to install these products separately.

  If you need to create a kit to install the PC component of the OpenVMS Management Station software, then you must include the OpenVMS Management Station Software—PC files component.

  See Section 3.5.3 for a complete list of components included with the OpenVMS Alpha operating system.

3.2 Booting the Operating System CD–ROM

The OpenVMS Alpha Version 7.2 operating system includes procedures that allow you to easily install the operating system using the POLYCENTER Software Installation utility. To get started, boot the OpenVMS Alpha operating system CD–ROM either from your local CD–ROM drive or from a CD–ROM drive connected to the InfoServer, as described in the following sections.

3.2.1 Booting from the Local Drive

To boot the operating system CD–ROM from the local CD–ROM drive, follow these steps:

1. Insert the operating system CD–ROM into the local CD–ROM drive.
2. At the console prompt (>>>), enter the SHOW DEVICE command so you can identify the name of the CD–ROM drive (for example, DKA400:).
3. Enter the boot command in the following format:

   BOOT -FLAGS 0,0 *source-drive*

   Substitute the device name of the CD–ROM drive (as listed in the SHOW DEVICE display) for *source-drive*.

   For example, if the SHOW DEVICE display lists the device name of your CD–ROM drive as DKA400, enter the following command and press the Return key:

   ```
   >>> BOOT -FLAGS 0,0 DKA400
   ```

3.2.2 Booting from the InfoServer

To boot the operating system CD–ROM using the InfoServer, follow these steps:

1. At the console prompt, enter the following command:

   ```
   >>> BOOT -FLAGS 0,0 -FILE APB_072 lan-device-name
   ```

   Note the following conventions:

   - *APB_072* is the file name of the APB program used for the initial system load (ISL) boot program.
   - *lan-device-name* is the name of the local area network (LAN) device identified with your computer. For information about the LAN devices your system supports, refer to the following table. For additional information, see the hardware manuals that you received with your Alpha computer and the *OpenVMS Software Product Description*.

Alpha Computer	Ethernet Device	FDDI Device
ALPHAbook 1	EOA0	–
AlphaServer 400 series	EWA0	FWA0
AlphaServer 1000 series	ERA0, EWA0	FRA0
AlphaServer 1000A series	EWA0	FWA0
AlphaServer 1200 series	EWA0	FWA0
AlphaServer 2000 series	ERA0, EWA0	FRA0
AlphaServer 2100, 2100A series	ERA0, EWA0	FRA0
AlphaServer 4100 series	EWA0	FWA0
AlphaServer 8200 series	EXA0, EWA0	FXA0
AlphaServer 8400 series	EXA0, EWA0	FXA0
AlphaStation 200 series	EWA0	FWA0
AlphaStation 400 series	EWA0	FWA0
AlphaStation 500 series	EWA0	FWA0
AlphaStation 600 series	ERA0, EWA0	FWA0
DEC 2000 series	ERA0	–
DEC 3000 series	ESA0	"n/ESA0"
DEC 4000 series	EZA0	–
DEC 7000 series	EXA0	FXA0
DEC 10000 series	EXA0	FXA0
Digital Personal Workstation (DPWS) series	EWA0	FWA0

Note

If you are using a DEC 3000 or 4000 series system, note the following:

- On DEC 3000 series systems, you can boot through the InfoServer using an alternate TURBOchannel device, such as a PMAD (Ethernet) or DEFTA (FDDI), by specifying the device name as ‘‘*n*/ESA0’’. The value for *n* is the TURBOchannel slot number, which you can obtain by entering the SHOW CONFIGURATION command at the console prompt (>>>) and examining the display. For more information, see Section A.1.8, in Appendix A.
- On DEC 4000 series systems, you *must* specify the ISL file name in uppercase (APB_072).

2. The InfoServer ISL program then displays the following menu:

```
Network Initial System Load Function
Version 1.2

  FUNCTION         FUNCTION
    ID
    1      -       Display Menu
    2      -       Help
    3      -       Choose Service
    4      -       Select Options
    5      -       Stop
```

```
Enter a function ID value:
```

3. Respond to the prompts as follows, pressing the Return key after each entry:

   a. Enter 3 for the function ID.

   b. Enter 2 for the option ID.

   c. Enter the service name (ALPHA072).

   A sample display follows:

```
Enter a function ID value: 3 Return

OPTION          OPTION
   ID
   1     -       Find Services
   2     -       Enter known Service Name

Enter an Option ID value: 2 Return
Enter a Known Service Name: ALPHA072 Return
```

Note

If you boot the OpenVMS Alpha operating system CD–ROM from an InfoServer but lose your connection during the installation procedure (the system is unresponsive and pressing Ctrl/Y does not return you to the menu), do the following:

IF ...	THEN ...
you previously chose the INITIALIZE option,	do the following: 1. Reboot the OpenVMS Alpha operating system CD–ROM. 2. Choose the install option from the menu and perform the installation again, as described in this chapter.
you previously chose the PRESERVE option,	do the following: 1. Reboot the OpenVMS Alpha operating system CD–ROM. 2. Enter the DCL environment by choosing option 7 from the menu. 3. Mount the device containing your backup copy of the target disk and the device that is your target disk. 4. Restore the backup copy of your target disk by entering the appropriate BACKUP commands. (See Appendix B for complete information using MOUNT and BACKUP commands to restore a system disk.) 5. Log out from the DCL environment. 6. Choose the install option from the menu and perform the installation again, as described in this chapter.

3.3 Creating the System Disk

The following sections describe how to create the system disk from the operating system CD–ROM.

3.3.1 Installing from the CD–ROM

After you boot the operating system CD–ROM, choose the install option (1) from the menu displayed on the screen. For example:

```
OpenVMS (TM) Alpha Operating System, Version V7.2

Copyright (c) 1998 Compaq Computer Corporation.  All rights reserved.


Installing required known files...

Configuring devices...

****************************************************************

You can install or upgrade the OpenVMS Alpha operating system
or you can install or upgrade layered products that are included
on the OpenVMS Alpha operating system CD-ROM.

You can also execute DCL commands and procedures to perform
"standalone" tasks, such as backing up the system disk.

Please choose one of the following:

    1)  Upgrade, install or reconfigure OpenVMS Alpha Version V7.2
    2)  Display products and patches that this procedure can install
    3)  Install or upgrade layered products and patches
    4)  Show installed products
    5)  Reconfigure installed products
    6)  Remove installed products
    7)  Execute DCL commands and procedures
    8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 1
```

The OpenVMS Alpha operating system CD–ROM may contain patch kits. If it does, information similar to the following is displayed:

```
The following PATCH kits are present on the OpenVMS Alpha
distribution media.

----------------------------------- ----------- ----------
PRODUCT                            KIT TYPE    KIT FORMAT
----------------------------------- ----------- ----------
DEC AXPVMS UCXECO_42_1 V1.0         Patch       Sequential
----------------------------------- ----------- ----------

1 item found

Please consult the OpenVMS Alpha Upgrade and Installation Manual,
the Release Notes, and the Cover Letter to determine if any or
all of these patches may be required for your system.
```

If you have not already done so, check to determine if you need to install any patches.

3.3.2 Choosing INITIALIZE or PRESERVE

After you choose the install option, the system displays the following information and prompts:

```
    ************************************************************

    The installation procedure will ask a series of questions.

          () - encloses acceptable answers
          [] - encloses default answers

    Type your response and press the <Return> key.  Type:

          ? - to repeat an explanation
          ^ - to change prior input (not always possible)
          Ctrl/Y - to exit the installation procedure


    There are two choices for Installation/Upgrade:

    INITIALIZE - Removes all software and data files that were
        previously on the target disk and installs OpenVMS Alpha.

    PRESERVE -- Installs or upgrades OpenVMS Alpha on the target disk
        and retains all other contents of the target disk.

   * NOTE: You cannot use preserve to install OpenVMS Alpha on a disk on
         which OpenVMS VAX or any other operating system is installed.

Do you want to INITIALIZE or to PRESERVE? [PRESERVE]
```

Respond to the INITIALIZE or PRESERVE prompt as follows:

IF ...	THEN ...
your system disk is new,	do the following: 1. Enter INITIALIZE. 2. Press the Return key.
you want to remove all files from an existing system disk,	do the following: 1. Enter INITIALIZE. 2. Press the Return key.
you want to retain certain files on an existing disk,	press the Return key to accept the default (PRESERVE).

3.3.3 Specifying the Target Disk

The procedure next asks you for the name of the target disk. If you enter a question mark (?), the system displays a list of devices on your system. Select the appropriate disk and respond to the prompt. For example:

```
You must enter the device name for the target disk on which
    OpenVMS Alpha will be installed.

Enter device name for target disk: (? for choices) DKB400
```

If you select a device that is not available or that cannot be used for some other reason, the system displays information indicating why the device cannot be used. For example, if you enter MKA500, a tape device, a message similar to the following is displayed:

```
MKA500 is not a disk device
```

3.3.4 Specifying the Volume Label

The system then prompts you for the volume label and asks if the information is correct. You can keep the label already assigned to the disk, accept the default label assigned by the system (ALPHASYS), or specify a different volume label (with a limit of 12 characters that can be letters A–Z, numbers 0–9, dollar signs ($), hyphens (-), or underscores (_)).

Note

Compaq strongly recommends that the volume labels for all disks on your system or OpenVMS Cluster have unique labels. If a disk that has the same label as the system disk is mounted, various OpenVMS components will not function as intended.

After you select the volume label and choose to continue by answering Yes to the next prompt, the target disk is initialized and mounted, and page and swap files are created. For example:

```
    DKB400: is now labeled ALPHASYS.
     The existing label causes problems for OpenVMS.
     You must enter a new label.

    Enter volume label for target system disk: [ALPHASYS] alphainsv

    You have chosen to install OpenVMS Alpha on a new disk.

    The target system disk, DKB400:, will be initialized.
    It will be labeled ALPHAINSV.
    Any data currently on the target system disk will be lost.

Is this OK? (yes/No) y

    Initializing and mounting target....

    Creating page and swap files....
```

3.3.5 Setting the SYSTEM Account Password

Before you respond to the system prompt asking you to enter a password for the SYSTEM account, note the following:

- Passwords must be at least eight characters in length; they do not appear on the display.
- Press the Return key after you enter the password.
- After you enter the password, the procedure checks to make sure it meets the requirements for a valid password.
- Reenter the password for verification.

The following is a sample display:

```
    You must enter a password for the SYSTEM account.

    The password must be a minimum of 8 characters in length,
    and may not exceed 31 characters.
    It will be checked and verified.
    The system will not accept passwords that can be guessed easily.

    The password will not be displayed as you enter it.

Password for SYSTEM account:

Reenter SYSTEM password for verification:
```

If you reenter the password incorrectly or if the system determines that the password is too easy for another user to guess, the system displays an error message and gives you the opportunity to specify a valid password.

3.3.6 Becoming a Cluster Member

The procedure now asks if your system will be part of a cluster. The display is similar to the following:

```
Will this system be a member of an OpenVMS Cluster? (Yes/No) Yes
```

Answering Yes to this question causes SYS$MANGER:CLUSTER_CONFIG.COM to run automatically when your newly installed system is first booted. The CLUSTER_CONFIG procedure will ask a series of questions about the cluster. If you answer No to the cluster question, the system can still be a member of an OpenVMS Cluster. However, in this case you will have to explicitly configure the cluster when your newly installed system is first booted. You can do this by executing a command similar to the following:

```
$ @SYS$MANGER:CLUSTER_CONFIG
```

3.3.7 Becoming an OpenVMS Galaxy Instance

The procedure next asks if your system will be an instance in an OpenVMS Galaxy. The display is similar to the following:

```
Will this system be an instance in an OpenVMS Galaxy? (Yes/No) Yes
```

If you answer Yes to this question, and you also answered Yes to the OpenVMS Cluster question, information about required remedial kits is displayed.

For compatibility with OpenVMS Galaxy, any systems in the OpenVMS Cluster that are running versions of OpenVMS prior to Version 7.1-2 must have a remedial kit installed. The following display indicates the correct remedial kits for various OpenVMS Alpha and VAX systems.

```
For compatibility with OpenVMS Galaxy, any systems in the OpenVMS Cluster
that are running versions of OpenVMS prior to Version 7.1-2 must have a
remedial kit installed.  The appropriate kit from the following list
must be installed on all system disks used by these systems.
(Later versions of these remedial kits may be used if available.)

     Alpha V7.1 and V7.1-1xx         ALPSYSB02_071
     Alpha V6.2 and V6.2-1xx         ALPSYSB02_062

     VAX V7.1                        VAXSYSB01_071
     VAX V6.2                        VAXSYSB01_062
```

3.3.8 MEMORY CHANNEL Information

This section contains information specific to becoming a cluster member in a MEMORY CHANNEL environment.

The MEMORY CHANNEL remedial kit (ALPMC01_071 and later) changed the data structures used with MEMORY CHANNEL. This change is not backwardly compatible and requires special considerations for MEMORY CHANNEL when upgrading OpenVMS from a version earlier than Version 7.1-2 to Version 7.1-2 (or later), under the following conditions:

- Your upgraded system disk will be part of an OpenVMS Cluster, and
- One or more of the systems in the OpenVMS Cluster has a MEMORY CHANNEL adapter, and

- Either:
  - Your OpenVMS Cluster uses multiple system disks, or
  - You will be performing a rolling upgrade

If your target system is already at OpenVMS Version 7.2 or later, you have already resolved this configuration issue. In this case, or if you indicated that the target system will not be a member of an OpenVMS Cluster, the procedure jumps to Section 3.3.9. Otherwise, it proceeds as follows:

```
An OpenVMS Cluster may use more than one system disk, either on a
continuing basis, or only during a rolling upgrade.

Will the OpenVMS Cluster use more than one system disk? (Yes/No) Yes
```

If you answer Yes to this question, the procedure provides information about MEMORY CHANNEL adapters, as follows:

```
A MEMORY CHANNEL adapter is a device that allows systems in an
OpenVMS Cluster to be connected (usually through a MEMORY CHANNEL hub)
to provide high speed communications among nodes in the OpenVMS Cluster.
```

If the procedure can detect that a MEMORY CHANNEL adapter (MCA) is present, it displays the following message:

```
This system has a MEMORY CHANNEL adapter.
```

Otherwise, it displays a question similar to the following:

```
Is a MEMORY CHANNEL adapter installed on this system
or on any other system in the OpenVMS Cluster?
(Yes/No) Yes
```

If you answer yes to this question, or your system has a MEMORY CHANNEL adapter, the following information is displayed:

```
You will be using multiple system disks and MEMORY CHANNEL adapters.
This requires special consideration in order to avoid data corruption.

Either the ALPMC01_071 TIMA kit must be installed on all system disks,
or you must not use the MEMORY CHANNEL until after all system disks in
the OpenVMS Cluster have been upgraded to the new OpenVMS release and all
systems have re-booted from the upgraded system disks.

You can prevent using MEMORY CHANNEL in one of two ways:

    o Power off the MEMORY CHANNEL hub, if one is used, or

    o Disconnect the MEMORY CHANNEL cable, if using a virtual hub.

 You must NOT POWER UP OR RECONNECT until after all system disks in
 the OpenVMS Cluster have been upgraded to the new OpenVMS release and all
 systems have re-booted from the upgraded system disks.

 You can search [VMS$COMMON.SYSUPD]VMSINSTAL.HISTORY for ALPMC on any
 system disk to determine if the TIMA kit is installed on that disk.


 Answer the next question with a "?" if you wish to search
 VMSINSTAL.HISTORY for the ALPMC01_071 TIMA kit.

Do you have the ALPMC01_071 TIMA kit installed on all systems disks that
are part of the OpenVMS Cluster and that are prior to OpenVMS V7.2?
(Yes/No) No
```

If you answer with a question mark (?), the OpenVMS SEARCH command is used to look in VMSINSTAL.HISTORY for the ALPMC01_071 remedial kit. If the kit is found, the line in VMSINSTAL.HISTORY that contains it is displayed. If it is not found, the message ‘‘No strings matched’’ is displayed. In either case, the question is repeated.

Answer Yes if the ALPMC01_071 remedial kit is installed as required on all system disks. Otherwise, answer No. If you answer No, the procedure continues as follows:

```
Have you powered off the MEMORY CHANNEL hub?
(Or disconnected the MEMORY CHANNEL cable?)
(Yes/No) No
```

Answer Yes if you have powered off the MEMORY CHANNEL hub or disconnected the MEMORY CHANNEL cable. Otherwise, answer No. If you answer No, the procedure continues as follows:

```
    Before proceeding with the OpenVMS upgrade, you must either

        o Install the ALPMC01_071 TIMA kit on all system disks
          that are part of the OpenVMS Cluster, or

        o Take action to prevent using MEMORY CHANNEL.

    Termination is strongly recommended.

Do you want to terminate? (Yes/No) [YES]
```

Note

If termination is recommended, do not attempt to continue. Follow the instructions provided in this section and with the ALPMC01_071 remedial kit. If you continue, MEMORY CHANNEL will not work correctly and you will encounter problems, including possible data corruption.

The installation will not recommend terminating if

- The system will not be a member of an OpenVMS Cluster, or
- The OpenVMS Cluster does not use more than one system disk, or
- There is no MEMORY CHANNEL adapter in the OpenVMS Cluster, or
- The ALPMC01_071 remedial kit is installed on all system disks in the OpenVMS Cluster, or
- You have powered down the MEMORY CHANNEL hub or disconnected the MEMORY CHANNEL cables

3.3.9 Installing Windowing and Networking Products

The procedure next asks if you want to install the following Compaq windowing and networking software:

- DECwindows Motif for OpenVMS Alpha
- DECnet-Plus for OpenVMS Alpha *or* DECnet Phase IV for OpenVMS Alpha
- DIGITAL TCP/IP Services for OpenVMS

This software is included with the OpenVMS Alpha operating system. You can change the default values for these products later in the installation procedure.

Note

The OpenVMS Alpha Version 7.2 installation menu offers the choice to install either DECnet-Plus or DECnet Phase IV networking software. However, you *cannot* have DECnet-Plus and DECnet Phase IV concurrently installed on your system. Install either DECnet-Plus or DECnet Phase IV.

Once you have DECnet-Plus and TCP/IP installed on your system, you can run DECnet applications over your TCP/IP network. Please see the *DECnet-Plus for OpenVMS Management Guide* for more information on DECnet over TCP/IP.

The display is similar to the following:

```
You can install the following products along with the OpenVMS operating system:

        o DECwindows Motif for OpenVMS Alpha
        o DECnet-Plus for OpenVMS Alpha
        o DECnet Phase IV for OpenVMS Alpha
        o DIGITAL TCP/IP Services for OpenVMS

    If you want to change your selections, you can do so later in the
    installation by answering "NO" to the following question:

        "Do you want the defaults for all product options?"


    Do you want to install DECwindows Motif for OpenVMS Alpha V1.2-5?
(Yes/No) [YES] y


    Beginning with OpenVMS V7.1, the DECnet-Plus kit is provided with the
    OpenVMS operating system kit.  Compaq recommends that DECnet
    users install DECnet-Plus.  DECnet Phase IV applications are
    supported by DECnet-Plus.

    DECnet Phase IV is also provided as an option.  Support for
    DECnet Phase IV is available through a Prior Version Support
    Contract available through Compaq's MCS Services.

    If you install DECnet-Plus and TCP/IP  you can run DECnet
    applications over a TCP/IP network.  Please see the OpenVMS
    Management Guide for information on running DECnet over TCP/IP.


    Do you want to install DECnet-Plus for OpenVMS Alpha V7.2?
(Yes/No) [YES] y


    Do you want to install Digital TCP/IP Services for OpenVMS V5.0-9?
(Yes/No) [YES] n
```

Note that if you answer No to the prompt to install DECnet-Plus, you will be prompted to install DECnet Phase IV.

3.3.10 Setting System Parameters

The procedure now asks you to set values for the parameters SCSNODE and SCSSYSTEMID. SCSNODE is a name that can be from 1 to 6 letters or numbers; it must include at least one letter. If this system is part of an OpenVMS Cluster, then SCSNODE must be unique within the cluster. If you are using DECnet Phase IV or DECnet-Plus with DECnet Phase IV addresses, then SCSNODE must be the same as your DECnet node name.

SCSSYSTEMID must also be unique within an OpenVMS Cluster. In addition, if you are using DECnet Phase IV or DECnet-Plus with DECnet Phase IV addresses, then SCSSYSTEMID depends on the DECnet Phase IV address that your system is using.

The following is an example of the display and valid responses:

```
    For your system to operate properly, you must set two parameters:
    SCSNODE and SCSSYSTEMID.

    SCSNODE can be from 1 to 6 letters or numbers.  It must contain at
    least one letter.

    If you plan to use DECnet, SCSNODE must be the DECnet Phase IV
    node name, or the DECnet-Plus (Phase V) node synonym.

    If you have multiple OpenVMS systems, the SCSNODE on each system
    must be unique.

Enter SCSNODE: alpcsi

    If you plan to use DECnet, SCSSYSTEMID must be set based on the
    DECnet Phase IV address.

    DECnet Phase IV addresses are in the format

        DECnet_area_number.DECnet_node_number

    DECnet_area_number is a number between 1 and 63.
    DECnet_node_number is a number between 1 and 1023.

    If you plan to use DECnet WITHOUT Phase IV compatible addresses,
    enter 0.0.


Enter DECnet (Phase IV) Address [1.1]: 63.180

    SCSSYSTEMID will be set to 64692.

        This was calculated as follows:

        (DECnet_area_number * 1024) + DECnet_node_number
```

If you are not using DECnet, or if you enter 0.0 as the DECnet Phase IV address, you are prompted to enter a SCSSSYSTEMID in the range of 1 to 65535. If this is a standalone system, the default 65534 is acceptable. However, if this system is part of an OpenVMS Cluster, you must enter a unique SCSSYSTEMID. The following is a sample display:

```
     Please choose a SCSSYSTEMID between 1 and 65535.  If you have multiple
     OpenVMS systems, the SCSSYSTEMID on each system must be unique.

Enter SCSYSTEMID [65535]: 12345
```

3.3.11 Updating Time Zone Information

At this point in the installation, the procedure asks you for information that is used for providing local time zone support. For local time zone support to work correctly, the installation procedure must set the time zone that accurately describes the location you want to be considered as your default time zone. Usually, this is the time zone in which your system is running. In addition, your system must be correctly configured to use a valid OpenVMS time differential factor (TDF).

The procedure displays a series of time zone menus and prompts you to make selections from each. Begin by selecting the desired time zone from the main time zone menu. If you do not select a time zone, the default is Greenwich Mean Time (GMT).

If you choose a time zone that has subcomponents, the system displays an additional menu. For example, if you choose the United States (US) time zone from the main menu, a second menu displays the specific time zones within the United States. You then select the menu item that best represents the desired time zone.

The procedure then prompts you for the TDF. The TDF is the difference between your system time and Coordinated Universal Time (UTC), which is an international standard (similar to Greenwich Mean Time) for measuring time of day. The procedure supplies a default for TDF, which is generally the correct response.

The following is a sample display:

```
Configuring the Local Time Zone


TIME ZONE SPECIFICATION -- Main Time Zone Menu

  1) Australia       11) GMT            21) Mexico          31) Turkey
  2) Brazil          12) Greenwich      22) NZ              32) UCT
  3) CET             13) Hongkong       23) NZ-CHAT         33) US
  4) Canada          14) Iceland        24) Navajo          34) UTC
  5) Chile           15) Iran           25) PRC             35) Universal
  6) Cuba            16) Israel         26) Poland          36) W-SU
  7) EET             17) Jamaica        27) ROC             37) WET
  8) Egypt           18) Japan          28) ROK             38) Zulu
  9) Factory         19) Libya          29) Singapore
 10) GB-Eire         20) MET            30) SystemV

  0) None of the above

Select the number above that best represents the desired time zone: 33

You selected US as your time zone.
Is this correct? (Yes/No) [YES]:

US Time Zone Menu

   1) Alaska           4) Central          7) Hawaii          10) Mountain
   2) Aleutian         5) East-Indiana     8) Indiana-Starke  11) Pacific
   3) Arizona          6) Eastern          9) Michigan        12) Samoa

   0) None of the above

Select the number above that best represents the desired time zone: 6

You selected US/Eastern as your time zone.
Is this correct? (Yes/No) [YES]:

    Default Time Differential Factor for standard time is -5:00.
    Default Time Differential Factor for daylight saving time is -4:00.

    The Time Differential Factor (TDF) is the difference between your
    system time and Coordinated Universal Time (UTC).  UTC is similar
    in most respects to Greenwich Mean Time (GMT).

    The TDF is expressed as hours and minutes, and should be entered
    in the hh:mm format.  TDFs for the Americas will be negative
    (-3:00, -4:00, etc.); TDFs for Europe, Africa, Asia and Australia
    will be positive (1:00, 2:00, etc.).

Is Daylight Savings time in effect? (Yes/No): y

Enter the Time Differential Factor [-4:00]:

    NEW SYSTEM TIME DIFFERENTIAL FACTOR = -4:00.

Is this correct? [Y]:
```

For more information about TDF and local time zone support, see the *OpenVMS System Manager's Manual*.

3.4 Registering Licenses

Before you can use the OpenVMS Alpha operating system and its components, you must register all licenses in one of two ways:

- During the installation (which Compaq recommends), by responding to the prompts displayed by the SYS$UPDATE:VMSLICENSE.COM procedure. This procedure is executed if you answer Yes (the default) to the following question:

```
Do you want to register any Product Authorization Keys?
```

- After the installation, by using the LICENSE REGISTER command or by invoking SYS$UPDATE:VMSLICENSE.COM.

In addition to reviewing the license information provided in this chapter, you can also refer to the following:

- Appendix C, which contains notes and supplemental information about licenses and licensing procedures
- The *OpenVMS License Management Utility Manual*, which contains complete, detailed information about the licensing procedure

3.4.1 Types of OpenVMS Alpha Licenses

The operating system uses one or more of the following types of licenses, depending on your hardware and software configuration.

Note

All OpenVMS Alpha Base and SMP licenses include the NO_SHARE attribute and remain with the initial host computer.

Type of License	Description
Operating System Base License	Grants the right to noninteractive use of the remote batch, print, application, and computing services of the operating system on a single processor and authorizes one direct login (for system management purposes only). This license is a prerequisite for OpenVMS Alpha Interactive User Licenses.
Interactive User Licenses	Grant the right to interactive use of the OpenVMS Alpha operating system, provided you have previously installed the appropriate OpenVMS Alpha Operating System Base License on your Alpha computer. These licenses, which are concurrent, are available in any quantity desired or as an unlimited user license. You can add interactive users to the computer at any time by specifying the same node name on the additional Interactive User License PAK and by following the license combination procedure described in the *OpenVMS License Management Utility Manual*.
Symmetric Multiprocessing (SMP) Extension to the Operating System Base License	Upgrades the Operating System Base License and all Interactive User licenses (including Unlimited) to the matching multiprocessing level of your DEC 4000 or DEC 7000 series Alpha computer. Because the Symmetric Multiprocessing (SMP) Extension grants all the rights the existing Base and User licenses provided at the uniprocessing level, you do not need to reinstall those licenses when you upgrade to a multiprocessing system. Each time you upgrade your system to a new multiprocessing level (for example, from a DEC 7000 Model 620 Alpha system to a DEC 7000 Model 630 Alpha system), you add an SMP Extension to your existing licenses.

3.4.2 How to Register Licenses

After you install the OpenVMS Alpha operating system, the system displays the following message:

```
    If you have Product Authorization Keys (PAKs) to register,
    you can register them now.

Do you want to register any Product Authorization Keys? (Yes/No) [Yes]
```

Respond to the prompt as follows:

IF ...	THEN ...
you choose to register your licenses at this time (which Compaq recommends),	do the following: 1. Be sure you review Appendix C and have the *OpenVMS License Management Utility Manual* available. 2. Be sure you have a copy of the Product Authorization Key (PAK) for each license that you will register. 3. Type Y and press the Return key. 4. Register your licenses, as described in the next section.
you choose *not* to register your licenses at this time,	do the following: 1. Type N and press the Return key. 2. Skip the next section about registering licenses and follow the directions in Section 3.5. 3. After completing the installation, register your licenses using the LICENSE REGISTER command or by invoking SYS$UPDATE:VMSLICENSE.COM *before* performing any other postinstallation tasks.

3.4.3 Using the Licensing Procedure

Entering Y (Yes) to register your licenses during the installation invokes the SYS$UPDATE:VMSLICENSE.COM procedure, which displays the following message:

```
VMS License Management Utility Options:

    1. REGISTER a Product Authorization Key
    2. AMEND an existing Product Authorization Key
    3. CANCEL an existing Product Authorization Key
    4. LIST Product Authorization Keys
    5. MODIFY an existing Product Authorization Key
    6. DISABLE an existing Product Authorization Key
    7. DELETE an existing Product Authorization Key
    8. COPY an existing Product Authorization Key
    9. MOVE an existing Product Authorization Key
   10. ENABLE an existing Product Authorization Key
   11. SHOW the licenses loaded on this node
   12. SHOW the unit requirements for this node

   99. Exit this procedure

   Type '?' at any prompt for a description of the information
   requested. Press Ctrl/Z at any prompt to return to this menu.

Enter one of the above choices [1]
```

1. Select the appropriate options (beginning with 1, as indicated in the display) until you have successfully registered all required PAKs.

2. After you register all your licenses, exit from the License Management procedure by entering option 99.

3.5 Completing the Installation

The following sections describe the remaining steps that you need to perform to complete the installation.

3.5.1 Choosing Descriptive Help Text

Next, the system prompts you as follows:

```
The installation can provide brief or detailed descriptions.
In either case, you can request the detailed descriptions by typing "?".

Do you always want detailed descriptions? (Yes/No) [No]
```

If you answer Yes, the system will display additional explanatory text with each prompt.

3.5.2 Selecting Components

The system next displays the following message, indicating that the procedure is ready to install the operating system:

```
The following product has been selected:
    DEC AXPVMS OPENVMS V7.2                    Platform (product suite)


Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

DEC AXPVMS OPENVMS V7.2: OpenVMS and related products Platform

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    Compaq Computer Corporation
```

After the system displays a series of additional messages, the procedure prompts you to choose the default values for all the options and suboptions for each component included in the operating system. The display is similar to the following:

```
    Do you want the defaults for all options? [YES]
```

When selecting components, note the following:

- If you want all the default values, press the Return key.

  If you want to select components individually, answer NO. The system will then prompt you for each option and suboption.

- If you are not sure whether you want certain options, request help by entering a question mark (?) at the prompt for that option.

- After you select all the options you want, you will have an opportunity to view your selections and make changes (if necessary).

- OpenVMS Management Station software is automatically installed on your OpenVMS system disk when you accept all the default values. If you do not accept the default values, you must select the OpenVMS Management Station component (server and client files) if you plan to use that product. After the installation is complete, you can then prepare your OpenVMS Alpha system and your PC to run OpenVMS Management Station by following the procedures described in Appendix D.

- If you decide after the installation to change which OpenVMS Alpha operating system options you want installed on your system, you must reconfigure the installation as described in Section 1.3.3.2.
- After you boot the new system disk and log in, you can obtain information about individual system files by entering HELP SYSTEM_FILES at the dollar sign prompt ($).

3.5.3 List of Components

The following components are included with the OpenVMS Alpha Version 7.2 operating system:

```
Accounting Log Report Generator Utility
Access Control List Utilities
Print and Batch Queue Utilities
DECdtm Distributed Transaction Manager
Support for DECnet-Plus or DECnet for OpenVMS
    DECnet Incoming Remote File Access
    DECnet Incoming Remote Terminal
    DECnet Network Test
    DECnet Remote Task Loading
Programming Support
    Debugger Utility
    Image Dump Utility
    RMS Analyze and FDL Editor Utilities
    Message Utility
    System Shareable Image and Object Module Libraries
    Macro libraries
    Macro-32 Migration Compiler
    TLB intermediary form of STARLET
    Fortran Require Files
    C Object Libraries
    C Header Files
    VMS text libraries of Ada declarations
RMS Journaling Recovery Utility
System Programming Support
    Support for ISO 9660 and High Sierra CD-ROM Formats
    MONITOR
    Analyze Object File Utility
    Delta Debugger
    System Dump Analyzer Utility
    Miscellaneous Symbol Table Files
OpenVMS Management Station Software -- PC files
Utilities
    OpenVMS Mail Utility
    Dump Utility
    DIGITAL Standard Runoff (DSR) Text Formatter
    Phone Utility
    Help Library
    Foreign Terminal Support
    LAT-11 Terminal Server (via Ethernet)
    Error Log Generator Utility
    Terminal Fallback Facility
    TECO Interactive Text Editor
    National Character Set Utility (NCS)
    DIAGNOSE Utility
    XPG4 Internationalization Utilities
Bliss Require Files
Example Files
Message Facility Files (HELP/MESSAGE)
Translated Image Support
UETP Files
Support for DECwindows
    DECwindows workstation files
    Video fonts
        100 dots per inch video fonts
Delete any obsolete OpenVMS files
```

3.5.4 Completing the Procedure

When you have answered all the prompts and selected the components you want installed, the system allows you to review your selections (and make changes if necessary), then installs the product, provides informational messages, and returns you to the menu. The following is a sample display:

Note

If you perform two installations at the same time to systems connected by MEMORY CHANNEL, you may a message similar to the following every 5 seconds:

```
%PMA0 CPU00: 30-OCT-1998 14:58:40 Remote System Conflicts with
Known System - REMOTE NODE
%PMA0 CPU00: 30-OCT-1998 14:58:45 Remote System Conflicts with
Known System - REMOTE NODE
```

Disregard the message. The installation or upgrade will proceed normally and the messages will not be present when the system reboots with its actual node name.

```
    Do you want to review the options? [NO]

Execution phase starting ...

The following products will be installed:
    DEC AXPVMS DECNET_OSI V7.2              Layered Product
    DEC AXPVMS DWMOTIF V1.2-5               Layered Product
    DEC AXPVMS OPENVMS V7.2                 Platform (product suite)
    DEC AXPVMS VMS V7.2                     Operating System

Portion done: 0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%

The following products have been installed:
    DEC AXPVMS DECNET_OSI V7.2              Layered Product
    DEC AXPVMS DWMOTIF V1.2-5               Layered Product
    DEC AXPVMS OPENVMS V7.2                 Platform (product suite)
    DEC AXPVMS VMS V7.2                     Operating System


    The installation is now complete.

    When the newly installed system is first booted, a special
    startup procedure will be run.  This procedure will:

        o  Configure the system for standalone or OpenVMS Cluster operation.
        o  Run AUTOGEN to set system parameters.
        o  Reboot the system with the newly set parameters.


    You may shut down now or continue with other operations.


  Process AXPVMS_INSTALL logged out at 12-SEP-1998 14:45:49.54

Press Return to continue...

    ************************************************************

    You can install or upgrade the OpenVMS Alpha operating system
    or you can install or upgrade layered products that are included
    on the OpenVMS Alpha operating system CD-ROM.

    You can also execute DCL commands and procedures to perform
    "standalone" tasks, such as backing up the system disk.

    Please choose one of the following:
```

```
        1)  Install or upgrade OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

    Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?)
```

If you want to install layered products, go to Section 3.6.

If you do not want to install layered products or perform any other operations prior to booting the new system disk, choose option 8 from the menu to shut down the system. The system display is similar to the following:

```
Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 8

    Shutting down the system


 SYSTEM SHUTDOWN COMPLETE
```

After you complete the installation and shut down the system, go to Section 3.7.

3.6 Installing Layered Products

You can use the menu system included on the operating system CD–ROM to install certain layered products with the POLYCENTER Software Installation utility. You can view a list of the layered products that can be installed in this way by choosing option 2 from the menu. (To install layered products that are not listed, see Chapter 4 and the installation documentation for each layered product.)

You may see the following product name while installing layered products:

```
DEC AXPVMS UCX V4.2-PLACEHOLDER
```

Do not attempt to install this kit. This is a "dummy" that is needed for technical reasons to facilitate upgrading from the prior UCX implementation of DIGITAL TCP/IP Services to the new implementation.

If you do attempt to install this kit, the following message will be displayed:

```
The UCX implementation of TCP/IP Services is obsolete and is not
supported on OpenVMS V7.2 and higher versions.

Starting with OpenVMS V7.2, the UCX implementation of TCP/IP
services is replaced by the new TCPIP product.

This is a placeholder kit to satisfy OpenVMS upgrade requirements
so that UCX can be automatically upgraded to TCPIP.

You cannot use this kit to install UCX.
```

The installation will then terminate.

You can install (or upgrade to) the new implementation of DIGITAL TCP/IP services, version 5.0, as part of the OpenVMS upgrade. If you wish to install version 5.0 separately, choose the product:

```
DEC AXPVMS TCPIP V5.0-9
```

To install layered products using the POLYCENTER Software Installation utility, choose option 2 to view the list and then option 3 to perform the installation. For example:

```
Please choose one of the following:

        1) Upgrade, install or reconfigure OpenVMS Alpha Version V7.2
        2) Display products and patches that this procedure can install
        3) Install or upgrade layered products and patches
        4) Show installed products
        5) Reconfigure installed products
        6) Remove installed products
        7) Execute DCL commands and procedures
        8) Shut down this system

        Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 2

            The following versions of the OpenVMS operating system, the
            DECwindows graphical user interface and network products.
            are available on the OpenVMS Distribution compact disk.
            They can be installed by selecting choice 1:

        DEC AXPVMS VMS version V7.2
        DEC AXPVMS DWMOTIF version V1.2-5
        DEC AXPVMS DECNET_OSI version V7.2
        DEC AXPVMS DECNET_PHASE_IV version V7.2
        DEC AXPVMS TCPIP version V5.0-9

            The following Layered Product kits are available on the OpenVMS
            Distribution Compact Disk.  They can be installed by selecting
            choice 3.  If already installed, they can be reconfigured by
            selecting choice 5, or removed by selecting choice 6.

        ---------------------------------- ----------- ----------
        PRODUCT                            KIT TYPE    KIT FORMAT
        ---------------------------------- ----------- ----------
        DEC AXPVMS DECNET_OSI V7.2         Full LP     Sequential
        DEC AXPVMS DECNET_PHASE_IV V7.2    Full LP     Sequential
        DEC AXPVMS DWMOTIF V1.2-5          Full LP     Sequential
        DEC AXPVMS TCPIP V5.0-9            Full LP     Sequential
        DEC AXPVMS UCX V4.2-99PLACEHOLDER  Full LP     Sequential
        ---------------------------------- ----------- ----------

        5 items found

        Press Return to continue...

            ************************************************************

            You can install or upgrade the OpenVMS Alpha operating system
            or you can install or upgrade layered products that are included
            on the OpenVMS Alpha operating system CD-ROM.

            You can also execute DCL commands and procedures to perform
            "standalone" tasks, such as backing up the system disk.

            Please choose one of the following:

        1) Upgrade, install or reconfigure OpenVMS Alpha Version V7.2
        2) Display products and patches that this procedure can install
        3) Install or upgrade layered products and patches
        4) Show installed products
        5) Reconfigure installed products
        6) Remove installed products
        7) Execute DCL commands and procedures
        8) Shut down this system

        Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 3
            ********************************************************

            If you choose to install or upgrade DECwindows Motif,
            please note the following:

              o If you did not select the OpenVMS DECwindows base support
                and workstation files options, DECwindows Motif will not run.
                You must add these options to use DECwindows Motif.

              o If you are upgrading DECwindows Motif from version V1.1 and
                want to save the OSF/Motif Release 1.1.3 programming files,
                DO NOT upgrade now.  Instead, see the DECwindows Motif
                installation manual and follow the instructions for running
                PCSI_INSTALLATION.COM.
```

```
    If you choose to install or upgrade DECnet-Plus or DECnet Phase IV,
    please note the following:

o If you did not select the OpenVMS DECNET option, neither version
        of DECnet will run.  You must add this option to use DECnet.

Press Return to continue...
   ************************************************************

    The installation procedure will ask a series of questions.

          () - encloses acceptable answers
          [] - encloses default answers

    Type your response and press the Return key.  Type:

          ? - to repeat an explanation
          ^ - to change prior input (not always possible)
          Ctrl-Y - to exit the installation procedure


    You must enter the device name for the target disk on which
    the layered product(s) installation will be performed.

Enter device name for target disk: [DKB400:] (? for choices)

    DKB400: is labeled V72_TCPIPV50.


    The install operation can provide brief or detailed descriptions.
In either case, you can request the detailed descriptions by typing
"?".

Do you always want detailed descriptions? (Yes/No) [No]

   1 - DEC AXPVMS DECNET_OSI V7.2          Layered Product
   2 - DEC AXPVMS DECNET_PHASE_IV V7.2     Layered Product
   3 - DEC AXPVMS DWMOTIF V1.2-5           Layered Product
   4 - DEC AXPVMS TCPIP V5.0-9             Layered Product
   5 - DEC AXPVMS UCX V4.2-99PLACEHOLDER   Layered Product
   6 - All products listed above
   7 - Exit

Choose one or more items from the menu separated by commas:
```

Note that the UCX V4.2-99PLACEHOLDER kit is not a valid UCX (TCP/IP) kit. It is present only to support upgrading UCX to the new TCPIP implementation of DIGITAL TCP/IP Services. Any attempt to install this PLACEHOLDER kit will terminate with an error.

If you do not want to perform any other operations after you install the layered products, enter option 8 to shut down the system. The system display is similar to the following:

```
Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 8

    Shutting down the system


 SYSTEM SHUTDOWN COMPLETE
```

After you complete the installation and shut down the system, go to the next section to boot the new system disk.

3.7 Booting the New System Disk

After you have successfully installed the operating system, boot the new system disk, as described in the following sections.

3.7.1 Preparing to Boot the New System Disk

Before you boot the new system disk, you must do the following:

1. Halt the system by entering Ctrl/P or by pressing the Halt button. [1]
2. At the console prompt (>>>), enter the SET BOOTDEF_DEV command in the following format:

   SET BOOTDEF_DEV *target-drive*

   Substitute the device name of the system disk for *target-drive*. The SET BOOTDEF_DEV command tells the system which disk to boot from. For example, if the system disk has the device name DKA400, enter the following command and press the Return key:

   ```
   >>> SET BOOTDEF_DEV DKA400
   ```

   If the system disk is connected to a hierarchical storage device (HS*x*), the format for specifying that drive is different. For example, on a DEC 7000 series system connected to an HSC device, the command is similar to the following:

   ```
   >>> SET BOOTDEF_DEV DUA20.14.0.2.0
   ```

   For more information about setting and showing the default boot device, see Section A.2.2 in Appendix A.

3.7.2 How to Boot the New System Disk

To boot the system disk, enter the following command and press the Return key:

```
>>> BOOT -FLAGS 0,0
```

When the system finishes booting, it displays informational messages that begin as follows:

```
    OpenVMS (TM) Alpha Operating System, Version V7.2
%DECnet-I-LOADED, network base image loaded, version = 05.0D.00
$!  Copyright (c) 1998 Compaq Computer Corporation.  All rights reserved.
    Installing required known files...
    Configuring devices...
.
.
.
```

3.8 Joining an OpenVMS Cluster

If during the installation, you previously answered Yes to the question about joining an OpenVMS Cluster, the system now asks a series of questions about your configuration (CI, DSSI, SCSI, local area, or mixed-interconnect).

You might need to refer to *OpenVMS Cluster Systems* or *Guidelines for OpenVMS Cluster Configurations* to answer these questions.

[1] For more information about halting your Alpha computer, see Appendix A.

3.8.1 OpenVMS Cluster Prompts

Table 3–1 lists the OpenVMS Cluster prompts and suggested responses. Note that, depending on your responses and particular cluster configuration, some prompts will not be displayed.

Table 3–1 Prompts for OpenVMS Cluster Configurations

Question	How to Respond
Will this node be a cluster member (Y/N)?	Enter Y.
What is the node's DECnet node name?	Enter the DECnet node name (for example, MYNODE). The DECnet node name may be from one to six alphanumeric characters in length and cannot include dollar signs or underscores.
What is the node's DECnet node address?	Enter the DECnet node address — for example, 2.2.
Will the Ethernet be used for cluster communications (Y/N)?	Enter N for a CI only or DSSI-only OpenVMS Cluster. Otherwise, answer Y. [1]
Enter this cluster's group number:	Enter a number in the range from 1 to 4095 or 61440 to 65535.
Enter this cluster's password:	Enter the cluster password. The password must be from 1 to 31 alphanumeric characters in length and may include dollar signs and underscores.[2]
Reenter this cluster's password for verification:	Reenter the password.
Will MYNODE be a disk server (Y/N)?	Enter Y if you want local disks to be served to the cluster (mandatory for local area and mixed-interconnect configurations). Refer to *OpenVMS Cluster Systems* for information on served cluster disks.
Will MYNODE serve RFxx disks (Y)?	Enter a response appropriate for your DSSI configuration, if such disks are available to your system.
Enter a value for MYNODE's ALLOCLASS parameter:	In a CI only system (connected to a dual-ported disk), a DSSI-only system, or a local area or mixed-interconnect configuration where nodes serve DSSI or CI disks, enter the appropriate allocation class value (1 to 255). Otherwise, enter 0. For information about selecting the ALLOCLASS parameter, see *OpenVMS Cluster Systems*.

[1]The Ethernet may not be required for communication within a local area OpenVMS Cluster system configured with FDDI devices. Within certain DSSI or CI mixed-interconnect configurations, neither the Ethernet nor FDDI may be required for communication. If your configuration fits either scenario, you can answer No (N) to this prompt.

[2]If neither the Ethernet nor FDDI is being used for communication in your cluster configuration, you may not need to supply the cluster group number and password.

(continued on next page)

Table 3–1 (Cont.) Prompts for OpenVMS Cluster Configurations

Question	How to Respond
Does this cluster contain a quorum disk (Y/N)?	For CI only, SCSI, local area, and mixed-interconnect configurations, enter Y or N, depending on your configuration. For most DSSI systems, enter Y. However, if you are adding a two-system DSSI configuration to an existing cluster (in which case you might not need a quorum disk), you can answer N. If you enter Y, the system asks for the name of the quorum disk. Enter the device name of the quorum disk. Refer to *OpenVMS Cluster Systems* for information on quorum disks.

3.9 Running AUTOGEN

The system next runs AUTOGEN to evaluate your hardware configuration and estimate typical work loads. AUTOGEN then sets system parameters, the sizes of page, swap, and dump files, and the contents of VMSIMAGES.DAT. When AUTOGEN finishes and you reboot your system, the installation procedure is complete.

The installation procedure displays messages similar to the following:

```
    AUTOGEN will now be run to compute the new SYSGEN parameters. The system
    will then shut down and reboot, and the installation or upgrade will be
    complete.

    After rebooting you can continue with such system management tasks as:

            Decompressing the System Libraries
            Configuring DECnet
            Using SYS$MANAGER:CLUSTER_CONFIG.COM to create an OpenVMS Cluster
            Creating FIELD, SYSTEST, and SYSTEST_CLIG accounts if needed

%AUTOGEN-I-BEGIN, GETDATA phase is beginning.
%AUTOGEN-I-NEWFILE, A new version of SYS$SYSTEM:PARAMS.DAT has been created.
        You may wish to purge this file.
%AUTOGEN-I-END, GETDATA phase has successfully completed.
%AUTOGEN-I-BEGIN, GENPARAMS phase is beginning.
%AUTOGEN-I-NEWFILE, A new version of SYS$MANAGER:VMSIMAGES.DAT has been created.
         You may wish to purge this file.
%AUTOGEN-I-NEWFILE, A new version of SYS$SYSTEM:SETPARAMS.DAT has been created.
        You may wish to purge this file.
%AUTOGEN-I-END, GENPARAMS phase has successfully completed.
%AUTOGEN-I-BEGIN, GENFILES phase is beginning.
%SYSGEN-I-EXTENDED, SYS$SYSROOT:[SYSEXE]PAGEFILE.SYS;1 extended
%SYSGEN-I-EXTENDED, SYS$SYSROOT:[SYSEXE]SWAPFILE.SYS;1 extended
%SYSGEN-I-CREATED, SYS$SYSROOT:[SYSEXE]SYSDUMP.DMP;1 created

%AUTOGEN-I-REPORT, AUTOGEN has produced some informational messages that
        have been stored in the file SYS$SYSTEM:AGEN$PARAMS.REPORT. You may
        wish to review the information in that file.

%AUTOGEN-I-END, GENFILES phase has successfully completed.
%AUTOGEN-I-BEGIN, SETPARAMS phase is beginning.
.
.
.
```

3.10 Rebooting the System

After AUTOGEN finishes, the system shuts down, displaying messages similar to the following:

```
The system is shutting down to allow the system to boot with the
generated site-specific parameters and installed images.

The system will automatically reboot after the shutdown and the
installation will be complete.


        SHUTDOWN -- Perform an Orderly System Shutdown
                    on node ALPCSI

%SHUTDOWN-I-BOOTCHECK, performing reboot consistency check...
%SHUTDOWN-I-CHECKOK, basic reboot consistency check completed
.
.
.
```

3.10.1 Rebooting the System Manually

If the system does not reboot automatically, reboot the system manually.

For example, if the system disk is on an RZ25 disk drive with a unit number of 1, enter the following command and press the Return key:

```
>>> BOOT DKA1
```

After the system reboots, a message similar to the following is displayed:

```
     OpenVMS (TM) Alpha Operating System, Version V7.2


    Copyright (c) 1998 Compaq Computer Corporation.  All rights reserved.
%STDRV-I-STARTUP, OpenVMS startup begun at 12-SEP-1998 14:50:18.35
.
.
.
```

The system next displays informational messages and accounting information indicating that your OpenVMS Alpha operating system is running. For example:

```
%SET-I-INTSET, login interactive limit = 64, current interactive value = 0
  SYSTEM       job terminated at  12-SEP-1998 14:51:23.47

  Accounting information:
  Buffered I/O count:           2177         Peak working set size:   6848
  Direct I/O count:             1358         Peak page file size:   179552
  Page faults:                  1805         Mounted volumes:            0
  Charged CPU time:     0 00:00:13.37        Elapsed time:   0 00:01:06.20
```

At this time, you can log in to the SYSTEM account (so you can perform postinstallation tasks), as described in the following sections.

3.11 Logging in to the SYSTEM Account By Means of a Character Cell Terminal

Log in to a character cell terminal by entering the user name SYSTEM followed by the password. The display is similar to the following:

```
        OpenVMS (TM) Alpha Operating System, Version V7.2

Username: SYSTEM
Password:
.
.
.
      OpenVMS (TM) Alpha Operating System, Version V7.2
```

(If you forget your password, follow the instructions in Appendix A to perform an emergency startup.)

3.12 Logging in to the SYSTEM Account By Means of a Workstation

If you installed the DECwindows Motif for OpenVMS Alpha software on your workstation, do the following after the login window displays on your screen:

1. Enter the user name SYSTEM followed by the password.
2. Click on the OK button.

3.13 What to Do Next

After you have successfully installed the OpenVMS Alpha operating system and logged in to the SYSTEM account, you must perform certain postinstallation tasks before you can use the system. For complete information, go to Chapter 4.

4

After Installing the OpenVMS Alpha Operating System

After you have installed the OpenVMS Alpha operating system, you must perform several important tasks to prepare the system for operation. This chapter describes the following postinstallation tasks in the order in which you perform them:

- Registering licenses
- Creating accounts
- Backing up the system disk
- Customizing the system
- Configuring and starting networking software
- Testing the system with UETP
- Decompressing the system libraries
- Adding and removing files
- Preparing your OpenVMS Alpha system and your PC to run OpenVMS Management Station
- Installing layered products
- Installing DIGITAL OpenVMS Debugger clients on a PC
- Backing up the customized system disk
- Configuring a multihead system
- Running AUTOGEN
- Using the postinstallation checklist

4.1 Registering Your Licenses

The installation procedure gave you the opportunity to register any software product licenses. If you did not register your OpenVMS Alpha licenses at that time, you must do so before you can use the OpenVMS Alpha operating system. You must also register the licenses for OpenVMS Alpha layered products.

You can invoke the OpenVMS License utility by entering the following command:

```
$ @SYS$UPDATE:VMSLICENSE
```

(You can also use the LICENSE REGISTER command.)

For information about registering licenses, see the following:

- Section 3.4

- Appendix C
- The *OpenVMS License Management Utility Manual*

4.2 Creating Accounts

During the installation, DEFAULT and SYSTEM accounts are created for you automatically. However, if you plan to have Compaq service representatives test your system or if you plan to run testing software such as UETP, you must create accounts for each representative and a SYSTEST (standalone system) or SYSTEST_CLIG (OpenVMS Cluster system) account to run UETP.

For complete information about creating accounts for Compaq service representatives and UETP, see the *OpenVMS System Manager's Manual: Essentials*.

4.3 Backing Up Your System Disk

After you install the operating system, protect your work by making a backup copy of the system disk in case you have any problems while customizing it.

To back up the system disk:

1. Shut down the system (described in Appendix A).
2. Boot the operating system CD–ROM (locally or from the InfoServer).
3. Use the menu system to enter the DCL environment (option 7).
4. Mount the system disk and the target device on which you will make the backup copy.
5. Enter backup commands to back up the system disk to supported media.
6. Log out from the DCL environment.
7. Shut down the system by selecting option 8 from the menu.
8. Boot from the system disk.

In addition to backing up the system disk now before you customize it, you should back up your system disk again after you successfully complete your customization tasks and install layered products.

For complete information about backup operations, including a description of an alternate method that does not require booting from the operating system CD–ROM and that allows you to back up a shadowed disk without disabling the shadow set, see Appendix B.

4.4 Customizing the System

You can customize the system to meet your site-specific needs. In addition, if your Alpha computer is part of an OpenVMS Cluster environment, you must prepare the cluster environment and configure the cluster.

For instructions on customizing the system, review the following documentation:

- If the computer is part of an OpenVMS Cluster environment, refer to *OpenVMS Cluster Systems* for further information about setting up a cluster.
- The release notes, for notes and restrictions that might be relevant to your customization plans.

- The *OpenVMS System Manager's Manual*, for instructions on customizing and using your system. You will find information about the following tasks:
  - Editing the template files SYCONFIG.COM, SYLOGICALS.COM, SYLOGIN.COM, and SYSTARTUP_VMS.COM
  - Starting the queue manager and creating a queue database
  - Setting up user accounts
  - Adjusting system parameters
  - Setting up your system to run DECdtm services
- Section 4.5.

Note

If you have installed the DECwindows Motif for OpenVMS Alpha layered product (see Section 4.10), you can customize your DECwindows environment.

4.5 Configuring and Starting Networking Software

The following sections describe how to configure and start your networking software.

4.5.1 DECnet-Plus for OpenVMS Alpha

If you installed DECnet-Plus for OpenVMS Alpha software, refer to the *DECnet-Plus for OpenVMS Release Notes* and *DECnet-Plus for OpenVMS Installation and Basic Configuration* for postinstallation instructions.

4.5.2 DECnet Phase IV for OpenVMS Alpha

Note

Support for DECnet Phase IV is only available under Compaq's Prior Version Support Program. Contact your local Compaq support representative for additional information.

If you plan to run DECnet Phase IV for OpenVMS Alpha software, note the following:

- After you have registered the license for the DECnet Phase IV for OpenVMS Alpha software, execute the interactive command procedure SYS$MANAGER:NETCONFIG.COM to automatically configure your system for networking. See the *DECnet for OpenVMS Guide to Networking* for instructions on using NETCONFIG.COM.
- After you start the queue manager (see the *OpenVMS System Manager's Manual*), edit the commands in SYS$COMMON:[SYSMGR]SYSTARTUP_VMS.COM that pertain to networking so that the DECnet Phase IV for OpenVMS Alpha software starts automatically when your system is booted. Edit the file as follows:
  - If you have batch queues set up on your system, choose the following command by removing the comment delimiter (!) from the command line.

Enabling this command allows the system to start up more quickly and decreases the amount of time you must wait to log in.

```
!$ SUBMIT SYS$MANAGER:STARTNET.COM
```

– If you do *not* have batch queues set up on your system, remove the comment delimiter (!) from the following lines:

```
$! DECNET_VERSION = F$INTEGER(F$EXTRACT(2,2,F$GETSYI("DECNET_VERSION")))
$! IF DECNET_VERSION .GE. 5
$!     THEN
$!         START/NETWORK "DECNET/OSI"
$!     ELSE
$!         START/NETWORK DECNET
$! ENDIF
```

• If you plan to run both DECnet Phase IV for OpenVMS Alpha and DECwindows software, you must also edit SYS$COMMON:[SYSMGR]SYSTARTUP_VMS.COM to *add* a comment delimiter (!) immediately following the dollar sign ($) in the following command:

```
$ DEFINE DECW$IGNORE_DECNET TRUE
```

If you are not going to start the DECnet Phase IV for OpenVMS Alpha software or have not yet started it, this command tells the DECwindows software not to wait for the DECnet Phase IV for OpenVMS Alpha software.

4.5.3 DIGITAL TCP/IP Services for OpenVMS

If you installed DIGITAL TCP/IP for OpenVMS software, refer to the *DIGITAL TCP/IP Services for OpenVMS Installation and Configuration* manual for information about how to configure this software using the TCPIP$CONFIG.COM procedure.

4.6 Testing the System with UETP

The User Environment Test Package (UETP) is a software package designed to test whether the OpenVMS Alpha operating system is installed correctly. As part of the postinstallation procedure, Compaq recommends that you run UETP to verify the installation.

For complete information about using UETP, see the *OpenVMS System Manager's Manual*.

4.7 Decompressing the System Libraries

Decompressing the system libraries gives the system faster access to them. The decompressed libraries require several thousand additional blocks of disk space for all libraries to be decompressed. You use the LIBDECOMP.COM procedure to decompress the libraries.

4.7.1 Determining Disk Space

To find out how much disk space you have, enter the following command and press the Return key:

```
$ SHOW DEVICE SYS$SYSDEVICE
```

If you have approximately 30,000 free blocks on the disk, you can decompress the libraries. Note that you can choose to decompress only the libraries that are used frequently.

4.7.2 Methods of Using LIBDECOMP.COM

You can use the LIBDECOMP.COM procedure to decompress libraries in three ways:

- Entering a command and responding to prompts from the procedure
- Entering an interactive command
- Entering a batch command

The following sections describe each method.

Note

Before you use the LIBDECOMP.COM procedure, be sure you are logged in to the SYSTEM account.

4.7.3 Responding to LIBDECOMP.COM Prompts

If you want to decompress libraries by responding to prompts from the LIBDECOMP.COM procedure, do the following:

1. Enter the following command and then press the Return key:

```
$ @SYS$UPDATE:LIBDECOMP.COM
```

   The following information is displayed:

```
                OpenVMS Library Decompression Utility

 1  HELPLIB.HLB          14  NCPHELP.HLB          27  PHONEHELP.HLB
 2  STARLET.OLB          15  SDA.HLB              28  LIB.MLB
 3  ACLEDT.HLB           16  SHWCLHELP.HLB        29  STARLET.MLB
 4  ANLRMSHLP.HLB        17  SYSGEN.HLB           30  STARLETSD.TLB
 5  DBG$HELP.HLB         18  ANALAUDIT$HELP.HLB   31  SYS$STARLET_C.TLB
 6  DBG$UIHELP.HLB       19  SYSMANHELP.HLB       32  ERFLIB.TLB
 7  DISKQUOTA.HLB        20  TFF$TFUHELP.HLB      33  SYS$LIB_C.TLB
 8  EDFHLP.HLB           21  EXCHNGHLP.HLB        34  VAXCCURSE.OLB
 9  INSTALHLP.HLB        22  TPUHELP.HLB          35  VAXCRTL.OLB
10  LATCP$HELP.HLB       23  EVE$HELP.HLB         36  VAXCRTLD.OLB
11  MAILHELP.HLB         24  EVE$KEYHELP.HLB      37  VAXCRTLT.OLB
12  MNRHELP.HLB          25  UAFHELP.HLB          38  IMAGELIB.OLB
13  EDTHELP.HLB          26  TECO.HLB

     39  VMS$VOLATILE_PRIVATE_INTERFACES.OLB


      A  ALL libraries to be decompressed
      E  EXIT this procedure

* Enter letter or number(s) of libraries to be decompressed
  (Separate multiple entries with a comma):
```

2. Enter the appropriate letter or the numbers of the libraries you want to decompress. To decompress all libraries, the process takes approximately one-half hour.

4.7.4 Using LIBDECOMP.COM Interactively

You can execute LIBDECOMP.COM interactively to decompress up to eight libraries at a time by listing the names of the libraries you want to decompress as parameters on the command line.

Be sure to separate the library names with commas and do not include the file extensions. For example, to decompress VAXCRTL.OLB, DISKQUOTA.HLB, and LIB.MLB interactively, enter the following command:

```
$ @SYS$UPDATE:LIBDECOMP VAXCRTL, DISKQUOTA, LIB
```

4.7.5 Using LIBDECOMP.COM in Batch

You can also execute LIBDECOMP.COM in batch mode to decompress up to eight libraries at a time by listing the names of the libraries you want to decompress as parameters on a command line that includes the SUBMIT command.

Be sure to separate the library names with commas and do not include the file extensions. For example, to decompress VAXCRTL.OLB, DISKQUOTA.HLB, and LIB.MLB as a batch job, enter the following command:

```
$ SUBMIT/NOTIFY/PARAMETERS=(VAXCRTL, DISKQUOTA, LIB)-
_$ SYS$UPDATE:LIBDECOMP
```

Note

When you enter the command for a batch job, be sure you enclose the list of library names within parentheses.

4.8 Adding and Removing Operating System Files

If you decide after the installation to change which OpenVMS Alpha operating system files you want installed on your system, you can use the menu system contained on the OpenVMS Alpha operating system CD–ROM to add or remove files.

Note

You can obtain information about individual system files by entering HELP SYSTEM_FILES at the dollar sign prompt ($).

To add or remove operating system files:

1. Mount and boot the OpenVMS Alpha operating system CD–ROM.
2. Choose option 1 from the menu.
3. Choose the PRESERVE option.
4. Enter the name of the device that contains the system disk and answer the questions.
5. After you answer the question ‘‘Do you want detailed descriptions?,’’ information regarding reconfiguring or reinstalling is displayed. Read the instructions, then choose the desired entry from the menu of options.

The following is a sample display:

```
    Please choose one of the following:

        1)  Install or upgrade OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 1
    ********************************************************

.
.
.

Do you want to INITIALIZE or to PRESERVE? [PRESERVE]

.
.
.
        Version V7.2 of the OpenVMS operating system is already installed
        on the target disk.  You may choose one of the following actions:

          o Reconfigure the OpenVMS platform.

            This action will allow you to change your selections of which
            of the windowing and network products you included with your
            OpenVMS operating system installation.

          o Reconfigure the OpenVMS operating system.

            This action will allow you to change your choices about which
            options you included for the OpenVMS operating system.

          o Reinstall the OpenVMS operating system.

            This action will cause ALL operating system  files to be replaced.
            You can also change your choices about which options you included
            for the OpenVMS operating system.

            Reinstall will take longer than Reconfigure.  Reinstall may be
            appropriate if you suspect that files in the operating system,
            or in the windowing and network products have become corrupted.

        If you want to reinstall any of the windowing and network products,
        choose "Install or upgrade layered products and patches" (option 3)
        from the main menu.

        If you want to change your choices about which options you included
        for any of the windowing and network products, choose "Reconfigure
        installed products" (option 5) from the main menu.

        Please choose one of the following:

            1)  Reconfigure the OpenVMS platform.
            2)  Reconfigure the OpenVMS operating system.
            3)  Reinstall the OpenVMS operating system.
            4)  Return to the Main Menu (abort the upgrade/installation).


    Enter choice or ? for help: (1/2/3/4/?) 2
    The following product has been selected:
        DEC AXPVMS VMS V7.2               Operating System


    Configuration phase starting ...

    You will be asked to choose options, if any, for each selected product
    and for any products that may be installed to satisfy software dependency
    requirements.

    DEC AXPVMS VMS V7.2: OpenVMS Operating System

        COPYRIGHT (c) 12-SEP-1998 -- All rights reserved

        Compaq Computer Corporation

    Do you want the defaults for all options? [YES]
```

Answer No to this question, and select the options you want as described in Section 3.5.2. A list of components is provided in Section 3.5.3. After you respond to the prompts, the display continues and the installation procedure completes as described in Section 3.5.4. The following is a continuation of the sample display:

```
    Do you want to review the options? [NO]

Execution phase starting ...
The following product will be reconfigured:
    DEC AXPVMS VMS V7.2
Portion done: 0%...10%...20%...30%...40%...50%...60%...80%...90%...100%
The following product has been reconfigured:
    DEC AXPVMS VMS V7.2
.
.
.
```

For detailed instructions on how to remove the OpenVMS Alpha operating system from your disk, see Appendix E.

4.9 Preparing to Use OpenVMS Management Station

If you installed the OpenVMS Management Station software on your system (either by accepting all default values or by selecting the component manually during the installation procedure), you must perform several tasks on your OpenVMS Alpha system and your PC before you can use OpenVMS Management Station. These tasks include the following:

- Editing system files
- Starting OpenVMS Management Station on other nodes
- Verifying that you have the proper memory, disk space, media, and the required software to install and run OpenVMS Management Station on your PC
- Installing the client software on your PC
- Defining DECnet nodes

For complete information about preparing your OpenVMS system and your PC to run the OpenVMS Management Station server and client software, see Appendix D.

Note

After you complete the tasks described in Appendix D, you can then remove those files from your system to save disk space. Do *not* use the DELETE command to remove the files. Instead, reconfigure the OpenVMS Alpha operating system as described in Section 4.8.

4.10 Installing Layered Products

You can use the menu system included on the operating system CD–ROM to install certain layered products with the POLYCENTER Software Installation utility. If you did not install those layered products previously during the installation procedure, you can do so using the following procedure. To install layered products that require VMSINSTAL, see Section 4.10.1.

Note

To use this procedure, the target system must have the exact same version of the OpenVMS Alpha operating system as the CD–ROM. If you need to install layered products on a target system that has a *different* version of the operating system, use the alternate procedure described in the next section.

1. Shut down the system (described in Appendix A).
2. Boot the operating system CD–ROM (locally or from the InfoServer).
3. Choose option 2 from the menu to view which layered products can be installed using the POLYCENTER Software Installation utility.
4. Choose option 3 from the menu to install the layered products.
5. Shut down the system by selecting option 8 from the menu.
6. Boot from the system disk.

If the layered product that you want to install is not listed in the display, see the documentation you received with that layered product for installation information.

For additional information about installing layered products, see the *OpenVMS System Manager's Manual*.

Be sure you back up the system disk after you install all your layered products.

4.10.1 Alternate Procedure

Following is another method for installing layered products from the OpenVMS Alpha operating system CD–ROM:

1. From your running OpenVMS system (the target system disk), mount the OpenVMS Alpha operating system CD–ROM.
2. Locate the directories and files containing the available layered products by entering the following command (where, in the example, DKA400: is the device name of the CD–ROM):

   ```
   $ DIRECTORY /NOHEAD/NOTRAIL DKA400:[*.KIT]
   ```

   You can use the PRODUCT FIND command to locate kits that are installed using the POLYCENTER Software Installation utility. For example:

   ```
   $ PRODUCT FIND * /SOURCE=DKA400:[*.KIT]
   ```

3. To install layered products that require VMSINSTAL (indicated in the directories by save-set file names with file types of .A, .B, and so on), enter the @SYS$UPDATE:VMSINSTAL command and then specify the CD–ROM device and directory. For example:

   ```
   $ @SYS$UPDATE:VMSINSTAL
   * Where will the distribution volumes be mounted: DKB400:[UCX032.KIT]
   ```

4. To install layered products that require the POLYCENTER Software Installation utility (indicated in the directories by file names with file types of .PCSI or .PCSI$DESCRIPTION), use the PRODUCT INSTALL command to specify the CD–ROM device name and directory. Following is an example of the PRODUCT INSTALL command:

```
$ PRODUCT INSTALL POSIX /SOURCE=DKB400:[POSIX020.KIT]
```

4.10.2 DECevent

When you install OpenVMS Alpha Version 7.2, the DIAGNOSE command is disabled. To enable the DIAGNOSE command, you must install the DECevent kit provided on the OpenVMS Alpha Version 7.2 CD–ROM following the installation of OpenVMS Alpha Version 7.2. The DECevent kit is located in the directory [DECEVENT_0252.KIT] on the CD–ROM.

If the DECevent kit provided on the OpenVMS Alpha CD–ROM is not installed after the operating system, users attempting to use the DIAGNOSE command will receive the following system message:

```
$ DIAGNOSE [params]
%DIA-E-NOINSTAL, DIAGNOSE has not been installed on this system
```

4.10.3 Monitoring Performance History

The OpenVMS Alpha Version 7.2 operating system CD–ROM also includes a Monitoring Performance History (MPH) kit located in the [MPH] directory. See the *OpenVMS Version 7.2 Release Notes* for more information about installing and using this optional software.

4.11 Installing DIGITAL OpenVMS Debugger Clients on a PC

The DIGITAL OpenVMS Debugger Version 7.2 includes a client/server interface. The debug server runs on the OpenVMS operating system; there are debug clients that run on OpenVMS, Microsoft Windows 95, and Microsoft Windows NT. There is no separate installation procedure for the components that run on the OpenVMS operating system. They are installed when you install the operating system. This section describes the procedure for installing debug clients on a PC.

The following table shows which client kit to use for each PC configuration:

CPU	Operating System	Client Kit
Intel	Microsoft Windows 95	[DEBUG_CLIENTS010.KIT]DEBUGX86010.EXE
Intel	Microsoft Windows NT	[DEBUG_CLIENTS010.KIT]DEBUGX86010.EXE
Alpha	Microsoft Windows NT	[DEBUG_CLIENTS010.KIT]DEBUGALPHA010.EXE

The client kits are self-extracting .EXE files. To make these clients available to PC users, copy these files from the distribution media to a suitable PATHWORKS share, FTP server, or other device available to the PC.

Once the appropriate executable file has been transferred to the PC, you can run the file to install the debug client on the PC. The InstallShield installation procedure guides you through the installation.

By default, the debug client is installed in the \Programs\OpenVMS Debugger directory. You can also click on the Browse button to select an alternate directory.

You can choose one of the following installation options:

Install Option	Details
Typical	Debug Client and the *OpenVMS Debugger Manual* in HTML format

Install Option	Details
Compact	Debug Client only
Custom	Choice of Debug Client and/or the *OpenVMS Debugger Manual* in HTML format

The Typical installation option creates an OpenVMS Debugger program folder that contains shortcuts to the following items:

- Debug client
- Debug client Help file
- The *OpenVMS Debugger Manual* in HTML format
- A Readme file
- An Uninstall procedure

For information about using the OpenVMS Debugger, see the *OpenVMS Debugger Manual*.

4.12 Backing Up the Customized System Disk

After you have customized the OpenVMS Alpha operating system to your satisfaction and installed your layered products, protect your work by making a standalone backup copy of the system disk.

For complete information about backup operations, including a description of an alternate method that does not require booting from the operating system CD–ROM, see Appendix B.

To back up the system disk:

1. Shut down the system (described in Appendix A).
2. Boot the operating system CD–ROM (locally or from the InfoServer).
3. Use the menu system to enter the DCL environment (option 7).
4. Mount the system disk and the target device on which you will make the backup copy.
5. Enter backup commands to back up the system disk to the target device.
6. Log out from the DCL environment.
7. Shut down the system by selecting option 8 from the menu.
8. Boot from the system disk.

4.13 Configuring a Multihead System

A multihead configuration consists of a single workstation (such as a DEC 3000 Alpha Model 500 system) that supports multiple graphics options. A graphics option consists of a graphics controller and a graphics display interface (monitor).

Your system can be automatically configured for multihead use if you rename the private server setup file from a template file type to a command procedure file type. The DECwindows Motif for OpenVMS Alpha server loads this command procedure on startup or restart. This file always configures the console as the primary head, or screen 0. The firmware always selects the lowest device found

in the system (that is, the device with the lowest TURBOchannel slot address) as the console device.

To set up your system for multihead support:

1. After installing the DECwindows Motif for OpenVMS Alpha software on your system, log in to your system.
2. Rename the private server setup file by entering the following command:

```
$ RENAME SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.TEMPLATE
_To: SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM
```

3. Restart the DECwindows server by entering the following command:

```
$ @SYS$STARTUP:DECW$STARTUP RESTART
```

See the most recent version of the *DECwindows Motif for OpenVMS Installation Guide* and *Managing DECwindows Motif for OpenVMS Systems* for more information about customizing your DECwindows environment using the SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM file.

4.14 Running AUTOGEN

When you installed the OpenVMS Alpha operating system, the system executed the AUTOGEN.COM procedure to set the values of system parameters and the sizes of the page, swap, and dump files according to the system configuration. As a postinstallation procedure, you should run the AUTOGEN.COM procedure again to properly tune the system.

Run AUTOGEN as follows:

1. After 24 hours of operation, run AUTOGEN in feedback mode and reboot the system.
2. Run AUTOGEN again in feedback mode two workdays later, and then reboot the system.
3. Compaq recommends that you run AUTOGEN from SAVPARAMS through TESTFILES on a weekly basis thereafter, and examine AGEN$PARAMS.REPORT to determine the need for additional changes.

4.14.1 Modifying Parameters

Based on your examination of AGEN$PARAMS.REPORT, you might need to modify parameter values in MODPARAMS.DAT. If so, note the following:

- Hardcoded values in MODPARAMS.DAT should not hinder AUTOGEN's ability to calculate feedback parameters. AUTOGEN generally does not reduce the value of parameters that allocate resources; it considers current parameter values to be minimum values, which means that you do not have to add MIN_* symbols to MODPARAMS.DAT.
- AUTOGEN does increase parameter values according to its calculations unless you have specified explicit or maximum values (by adding MAX_* symbols) in MODPARAMS.DAT.

For more information about the MODPARAMS.DAT file and about using AUTOGEN in general, see the *OpenVMS System Manager's Manual*.

4.15 Postinstallation Checklist

Use the following checklist to make sure you perform all the necessary postinstallation tasks:

- ☐ Register your licenses if you did not do so during the installation procedure.
- ☐ Create accounts.
- ☐ Back up the system disk as a safeguard before customizing the system.
- ☐ Customize the system.
- ☐ Configure and start the DECnet for OpenVMS Alpha software.
- ☐ Run the User Environment Test Package (UETP) to test the system.
- ☐ Decompress the system libraries using LIBDECOMP.COM.
- ☐ Add and remove files.
- ☐ Prepare your OpenVMS Alpha system and your PC to run OpenVMS Management Station by following the procedures described in Appendix D.
- ☐ Install layered products.
- ☐ Back up the system disk after you have customized it and installed layered products.
- ☐ Configure your multihead system (if applicable).
- ☐ After the system has been running for at least 24 hours, run AUTOGEN to collect feedback information and modify the MODPARAMS.DAT file (if necessary).

5

Before Upgrading the OpenVMS Alpha Operating System

This chapter describes which tasks you should perform prior to beginning an upgrade. Tasks described in this chapter include:

- Reviewing notes, cautions, and restrictions
- Preparing to upgrade in a volume shadowing environment
- Backing up the current system disk
- Preparing the system disk for the upgrade
- Shutting down the system
- Using the preupgrade checklist

In addition to reviewing the information in this chapter, you might need to refer to the following sources of information as well:

- *OpenVMS Version 7.2 Release Notes*
- *OpenVMS System Manager's Manual*, for information about using AUTOGEN, modifying the system parameters file (MODPARAMS.DAT), and related operations
- *OpenVMS System Management Utilities Reference Manual*, for information about using system management utilities such as SYSMAN and ANALYZE /DISK_STRUCTURE
- *OpenVMS Guide to System Security*, for information about reestablishing your security environment after the upgrade

5.1 Notes, Cautions, and Restrictions

This section provides important information that can affect the success of your upgrade. Review the cautions, restrictions, and notes carefully before you begin the upgrade.

5.1.1 Spiralog File System Not Supported

The Spiralog file system will *not* work with OpenVMS Alpha Version 7.2. If Spiralog is installed on your system, you *must* uninstall it before upgrading to OpenVMS Alpha Version 7.2.

5.1.2 Required Operating System Version

To upgrade to Version 7.2 of the OpenVMS Alpha operating system, you must be running at least Version 6.1, 6.2–*xxx*, 7.0, or 7.1–*xxx*.

If you are upgrading in a cluster environment, also see Chapter 6 for information about the required version of the OpenVMS Alpha operating system.

5.1.3 Upgrade Paths

Upgrades are supported from Version 6.1, 6.2-*xxx*, 7.0, and 7.1-*xxx* of the OpenVMS Alpha operating system.

Rolling upgrades are supported from Version 6.2-*xxx* and 7.1-*xxx* of the OpenVMS Alpha operating system (see Chapter 6 for more information).

5.1.4 Update License

To upgrade to OpenVMS Alpha Version 7.2, you must have an appropriate license. Compaq's software licenses grant the right to use the current version of a product or any previous version of the product at the time of purchase. If you have an OpenVMS Alpha license prior to Version 7.2 and are not covered by a Software Product Services agreement, which includes the right to use new versions (RTNV), you must purchase an Update License before upgrading to OpenVMS Alpha Version 7.2.

If you do not have an Update License, please contact your Compaq support representative who will assist you in obtaining the correct Product Authorization Key (PAK) needed to access the OpenVMS operating system.

5.1.5 Files and Directories

If you choose not to install optional OpenVMS Alpha software during the upgrade, the upgrade procedure removes existing files for those components from the system disk.

If you have changed directory structure on your system disk, the upgrade procedure will not work correctly. Restore your system disk to a standard directory structure before you attempt an upgrade.

The OpenVMS Alpha Version 7.2 upgrade procedure provides new files and directories in the directory [VMS$COMMON...]. If you had any special protections and access control lists (ACLs) before the upgrade, you need to reapply them to reestablish the security environment you had previously set up. For more information about creating and maintaining a secure environment, see the *OpenVMS Guide to System Security*.

5.1.6 Licenses and Layered Products

The upgrade procedure is designed so that you should not have to reinstall most layered products after the upgrade. However, you might need to reinstall certain layered products because of product-specific installation procedures.

The upgrade procedure leaves your OpenVMS Alpha license and layered product licenses intact. You do not need to reinstall these licenses after you upgrade.

5.2 Preparing to Upgrade in a Volume Shadowing Environment

Because you cannot upgrade the operating system on a shadowed system disk (the upgrade will fail), you need to disable shadowing on that disk and perform other operations before you can upgrade the operating system.

There are several methods for creating a nonshadowed target disk. This chapter describes how to change one of your *existing* shadowed system disks in a multimember shadow set to a nonshadowed disk that you can use as your target disk for the upgrade.

If you have a larger configuration with disks that you can physically access, you may want to use a *copy* of the system disk as your target disk. *Volume Shadowing for OpenVMS* describes two methods you can use to create this copy (using volume shadowing commands or BACKUP commands) and how to disable volume shadowing.

5.2.1 Creating a Nonshadowed Target Disk

Change one of your existing shadowed system disks to a nonshadowed disk as follows:

1. Shut down all systems booted from the shadowed system disk.
2. Perform a conversational boot (see Appendix A if necessary) on the system disk you have chosen for your target disk. For example:

   ```
   >>> BOOT -FLAGS 0,1 DKA100
   ```

3. At the SYSBOOT> prompt, enter the following command to disable volume shadowing on the disk:

   ```
   SYSBOOT> SET SHADOW_SYS_DISK 0
   ```

4. Enter the CONTINUE command to resume the boot procedure. For example:

   ```
   SYSBOOT> CONTINUE
   ```

5. After the boot completes, log in to the system.

After you have created a nonshadowed system disk that you can use for the upgrade, perform the additional preupgrade procedures described in the balance of this chapter.

5.2.2 Changing the Label

If you want to change the label on the upgrade disk, use the DCL command SET VOLUME/LABEL=*volume-label device-spec[:]* to perform this optional task. (The SET VOLUME/LABEL command requires write access [W] to the index file on the volume. If you are not the volume owner, you must have either a system UIC or the SYSPRV privilege.)

For OpenVMS Cluster systems, be sure that the volume label is a unique name across the cluster.

If you change the volume label, you must also register that change in the POLYCENTER Software Installation utility database. To do this, use the following command:

```
$ PRODUCT REGISTER VOLUME old-volume-label device-name
```

Note that you must supply the *old* volume label. The new volume label is found by using the device name.

Note

If you need to change the volume label of a disk that is mounted across the cluster, be sure you change the label on all nodes in the OpenVMS Cluster system. The following example shows how you can use the SYSMAN utility to define the environment as a cluster and propagate the volume label change to all nodes in that cluster:

```
SYSMAN> SET ENVIRONMENT/CLUSTER
SYSMAN> DO SET VOLUME/LABEL=new-label disk-device-name:
```

5.2.3 Setting the Boot Device

Be sure your system is set to boot from the upgrade disk by default. Use the SHOW BOOTDEF_DEV and SET BOOTDEF_DEV console commands to accomplish this task. (See Appendix A for more information.)

5.3 Backing Up the System Disk

Compaq strongly recommends that you make a backup copy of the system disk and, if your configuration allows it, upgrade the *backup copy*. (If there are problems, you will still have a working system disk.)

To back up the system disk:

1. Shut down the system (described in Appendix A).
2. Boot the operating system CD–ROM (locally or from the InfoServer).
3. Use the menu system to enter the DCL environment (option 7).
4. Mount the system disk and the target device on which you will make the backup copy.
5. Enter backup commands to back up the system disk to the target device.
6. Log out from the DCL environment.
7. Shut down the system by selecting option 8 from the menu.
8. Boot from the system disk.

For complete information about backup operations, including a description of an alternate method that does not require booting from the operating system CD–ROM, see Appendix B.

5.4 Preparing the System Disk

The following sections describe how to prepare the system disk for the upgrade. The operations include the following:

- Examining the system disk
- Checking the size of the system disk
- Verifying system parameters

5.4.1 Examining the System Disk

Examine and repair (if necessary) the system disk using the ANALYZE/DISK_STRUCTURE command. (See the *OpenVMS System Management Utilities Reference Manual* for more information about this command.) Use the following procedure:

1. Analyze the system disk for inconsistencies and errors in the file structure by entering the following command:

   ```
   $ ANALYZE/DISK_STRUCTURE SYS$SYSDEVICE
   ```

   Ignore the following message:

   ```
   %ANALDISK-I-OPENQUOTA, error opening QUOTA.SYS
   ```

2. If you find any other errors on the system disk, repair the errors by entering the following command:

   ```
   $ ANALYZE/DISK_STRUCTURE/REPAIR SYS$SYSDEVICE
   ```

5.4.2 Checking the Size of the System Disk

It is difficult to determine in advance how many blocks of disk space you will need for the upgrade. It depends on how many files you have on the target disk already and on how many components you select during the upgrade procedure. However, the following information will help:

- The *maximum* amount of disk space you will need is approximately 360,000 blocks, but your system might use substantially less.
- After you select the components you want installed on the system for the upgrade, the upgrade procedure calculates whether you have enough disk space, displaying the number of available blocks and the number required for the upgrade. If the procedure determines that your disk does not have enough space to perform the upgrade, it displays a message to alert you and allows you to terminate the upgrade so you can create more disk space and try the upgrade again.

To see how much space you have on the system disk, enter the following command:

```
$ SHOW DEVICE SYS$SYSDEVICE
```

5.4.3 Verifying System Parameters

Verify (and modify if necessary) system parameters, described as follows. (If necessary, see the *OpenVMS System Manager's Manual* for more information about modifying system parameters.) Any system parameters that you modified and *did not* enter in SYS$SYSTEM:MODPARAMS.DAT are lost during the upgrade. To retain these parameters, enter their names in SYS$SYSTEM:MODPARAMS.DAT and the value that AUTOGEN needs to

add to the default minimum value. (When AUTOGEN runs after the upgrade, it uses the values in SYS$SYSTEM:MODPARAMS.DAT.)

For example, if you modified GBLPAGES by 128 pages above the default, add the following line to SYS$SYSTEM:MODPARAMS.DAT:

```
ADD_GBLPAGES=128
```

5.5 What to Do Next

Continue the preupgrade tasks as follows, depending on whether you are upgrading in a standalone or OpenVMS Cluster environment:

IF ...	THEN ...
you are upgrading a standalone system,	do the following: 1. Log in to the SYSTEM account. 2. Enter the following command and then press the Return key: `$ @SYS$SYSTEM:SHUTDOWN` 3. When the procedure asks if an automatic system reboot should be performed, enter N (No) and press the Return key. 4. Go to the checklist at the end of this chapter to verify that you have performed the necessary tasks; then go to Chapter 7 to begin the upgrade procedure.
you are upgrading an OpenVMS Cluster system,	do the following: 1. Review the checklist at the end of this chapter. 2. Go to Chapter 6.

5.6 Preupgrade Checklist

Use the following checklist to make sure you have performed all the tasks before beginning the upgrade:

- ☐ Review all cover letters and the release notes.
- ☐ Review all cautions and notes.
- ☐ If your system disk is part of a shadow set, create a nonshadowed system disk to upgrade.
- ☐ Set up your system to record the upgrade procedure on either a hardcopy terminal or a printer attached to the console terminal. If you do not do this, the screen messages will be lost. You will need a transcript in case there is a problem during the upgrade. For information on how to record the procedure, see the hardware manuals that came with your Alpha computer.
- ☐ Make a backup copy of the system disk.
- ☐ Examine and repair (if necessary) the system disk using the ANALYZE /DISK_STRUCTURE command.
- ☐ Check the size of the system disk.
- ☐ Verify system parameters.

Before Upgrading the OpenVMS Alpha Operating System 5.6 Preupgrade Checklist

- ☐ Shut down the system (if you are upgrading in a standalone environment).
- ☐ If you are upgrading an OpenVMS Cluster system, go to Chapter 6. If you are not upgrading an OpenVMS Cluster system, go to Chapter 7 to begin the upgrade procedure.

6

Preparing to Upgrade in an OpenVMS Cluster Environment

This chapter describes how to prepare to upgrade in an OpenVMS Cluster environment, depending on the type of upgrade you perform and whether you need to add any new computers to the cluster.

Note

Be sure you have performed the preupgrade tasks described in Chapter 5 before you upgrade your OpenVMS Cluster system.

When you upgrade the operating system in an OpenVMS Cluster environment, be sure the following information is available to review:

- The cover letters and the software product descriptions included with your distribution kit
- *OpenVMS Version 7.2 Release Notes*
- *OpenVMS Cluster Systems*
- *Guidelines for OpenVMS Cluster Configurations*
- *OpenVMS Version 7.2 New Features Manual*

6.1 Mixed-Version Support

OpenVMS Alpha Version 7.2 and OpenVMS VAX Version 7.2 provide two levels of support for mixed-version and mixed-architecture OpenVMS Cluster systems. These two support types are *warranted* and *migration*.

Warranted support means that Compaq has fully qualified the two versions coexisting in an OpenVMS Cluster and will answer all problems identified by customers using these configurations.

Migration support is a superset of the Rolling Upgrade support provided in earlier releases of OpenVMS and is available for mixes that are not warranted. Migration support means that Compaq has qualified the versions for use together in configurations that are migrating in a staged fashion to a newer version of OpenVMS VAX or to OpenVMS Alpha. Problem reports submitted against these configurations will be answered by Compaq. However, in exceptional cases Compaq may request that you move to a warranted configuration as part of answering the problem.

Migration support will help you move to warranted OpenVMS Cluster version mixes with minimal impact on your cluster environment. Table 6–1 shows the level of support provided for all possible version pairings.

Table 6–1 OpenVMS Cluster Warranted and Migration Support for VAX and Alpha

	V6.2-*xxx*	V7.1-*xxx*	V7.2
V6.2	WARRANTED	Migration	Migration
V7.1	Migration	WARRANTED	Migration
V7.2	Migration	Migration	WARRANTED

Note

Compaq does not support the use of Version 7.1 or higher with Version 6.1 (or earlier versions) in an OpenVMS Cluster environment.

6.2 Adding a New System to the Cluster

If you need to add a new computer supported by OpenVMS Alpha Version 7.2 to an existing OpenVMS Cluster configuration, Compaq supports two options, listed in the following preferred order:

1. Upgrade the entire cluster to Version 7.2 of the OpenVMS Alpha operating system and add the new computer as a member.
2. If you need to keep some systems in the cluster running the current version of OpenVMS Alpha, you must upgrade a system disk in the cluster to OpenVMS Alpha Version 7.2 using the rolling upgrade procedure. Then boot the new computer into the cluster using that upgraded system disk.

6.3 Types of Upgrades

There are two types of cluster upgrades: **concurrent** and **rolling**. The type of upgrade you use depends on whether you want to maintain the availability of the cluster during the upgrade and whether you have more than one system disk. Review this chapter and then perform the preliminary tasks for the upgrade procedure (concurrent or rolling) that best suits your configuration.

6.4 Concurrent Upgrade

This section describes the following:

- How a concurrent upgrade works
- Preparing your system for a concurrent upgrade

6.4.1 How a Concurrent Upgrade Works

During a concurrent upgrade, you must shut down the entire cluster and upgrade each system disk. No one can use the cluster until you upgrade each system disk and reboot each Alpha computer. When the cluster reboots, each Alpha computer will be running the upgraded version of the OpenVMS Alpha operating system.

If all Alpha systems in the OpenVMS Cluster environment are booted from one system disk, you must perform a concurrent upgrade.

6.4.2 Preparing Your System for a Concurrent Upgrade

To prepare for a concurrent upgrade:

1. Log in locally to the SYSTEM account.
2. Shut down all systems by entering the following command on each system (satellites first, then the boot nodes):

   ```
   $ @SYS$SYSTEM:SHUTDOWN
   ```

3. When the procedure asks if an automatic system reboot should be performed, enter N (No) and press the Return key.
4. Choose the CLUSTER_SHUTDOWN option.
5. When the shutdown procedure is finished on all nodes, halt each system by entering Ctrl/P or by pressing the Halt button.[1]
6. If you have only one system disk for your cluster, go to Chapter 7 to begin the upgrade procedure.

   If you have more than one system disk, make sure that you have performed the preupgrade tasks on each system disk that you will be upgrading. Then go to Chapter 7 and perform an upgrade on each system disk. You do not have to reboot the operating system CD–ROM for each upgrade. You only need to choose option 1 from the menu for each upgrade.

   After the upgrade is complete, you will be instructed to reboot each computer in the OpenVMS Cluster environment before beginning other postupgrade procedures.

6.5 Rolling Upgrade

This section describes the following:

- How a rolling upgrade works
- Notes and restrictions
- Preparing your system for a rolling upgrade

6.5.1 How a Rolling Upgrade Works

During a rolling upgrade, you upgrade each system disk individually, allowing old and new versions of the operating system to run together in the same cluster, creating a **mixed-version** cluster. Because rolling upgrades allow mixed-version clusters, the systems that you are not upgrading remain available. During a rolling upgrade, you keep some of the computers in the cluster running while you upgrade others (you must have more than one system disk).

6.5.2 Notes and Restrictions

The following restrictions apply to rolling upgrades. See the *OpenVMS Version 7.2 Release Notes* for additional compatibility issues and restrictions.

- Rolling upgrades are supported from Version 6.2-*xxx* and 7.1-*xxx* of the OpenVMS Alpha operating system. Rolling upgrades in mixed-architecture OpenVMS Cluster environments are supported with VAX computers running Versions 7.1 or 6.2 of the OpenVMS VAX operating system (see Table 6–1).

[1] For more information about halting your Alpha computer, see Appendix A.

- The upgraded system does not attempt to access any disk that is being accessed by one or more of the remaining OpenVMS Cluster systems.
- The remaining OpenVMS Cluster systems do not attempt to access the target disk of the system being upgraded.

  If the target disk being upgraded is locally attached to the system performing the upgrade, then it is not accessible to the remaining OpenVMS Cluster systems. (The OpenVMS system booted from the operating system CD–ROM does not MSCP serve local disks.) Whenever possible, Compaq recommends that you perform the upgrade on a local disk or that you perform a concurrent upgrade.

  During the upgrade, be sure that the target disk you select, as well as any disk you access from the DCL menu option, is either a local disk or one that is not being accessed by any of the remaining OpenVMS Cluster members.

Note

Any attempt to access the target disk from the remaining OpenVMS Cluster members will corrupt the target disk in most cases. Even if the target disk is mounted only by a remaining cluster member, and no file access is done, the target disk will probably be corrupted. If a disk is corrupted in this way, the only supported recovery is to restore the backup copy of the corrupted disk.

- Compaq recommends that all Alpha computers in a cluster run the same (and preferably the latest) version of the OpenVMS Alpha operating system.
- You cannot perform a rolling upgrade if all systems boot from a single system disk. Perform a concurrent upgrade instead.
- The upgrade procedure affects the queuing system as follows:
  - The queuing system is not active on the system you are upgrading; do not attempt to execute a START/QUEUE/ MANAGER command.
  - You cannot create a queue database on the operating system CD–ROM (because it is not writable).
  - The queue manager process on other nodes in the cluster can continue to run during the upgrade if the queue database is not on the disk being upgraded.

6.5.3 Preparing Your System for a Rolling Upgrade

To prepare for a rolling upgrade:

1. Log in to any node where the target disk is mounted as a *data* disk, rather than as the *system* disk. (That disk must be the one on which you already performed the preupgrade tasks described in Chapter 5.)
2. Check the votes and make adjustments to maintain the proper quorum so the cluster can continue to operate throughout the upgrade. (*OpenVMS Cluster Systems* describes this procedure in detail.)
3. Use the DCL command DISMOUNT/CLUSTER to dismount the data disk. (You can also perform this operation using the SYSMAN utility.)

   Note that you can ignore messages from nodes where the specified data disk is being used as the system disk.

4. Verify that the data disk has been dismounted successfully by entering the following commands:

```
$ MCR SYSMAN
SYSMAN> SET ENVIRONMENT/CLUSTER
SYSMAN> DO SHOW DEVICE disk-name
```

   Examine the display to be sure the disk is not mounted on any nodes as a data disk. Noting the value listed in the Trans Count field can help you make that determination: A value of less than 50 indicates that the disk is mounted as a data disk rather than as the system disk; a much larger value (for example, 300) indicates that the disk most likely is the system disk.

5. If the disk is still mounted on any nodes as a data disk, use the SYSMAN utility to dismount the disk; otherwise, exit from the SYSMAN utility.

6. Shut down all nodes that boot from the system disk you are upgrading, including the node from which you will perform the upgrade. Enter the following command on each node:

```
$ @SYS$SYSTEM:SHUTDOWN
```

7. When the procedure asks if an automatic system reboot should be performed, enter N (No) and press the Return key.

8. Choose the REMOVE_NODE option.

9. If proper quorum is not maintained at any time during the upgrade procedure, the shutdown procedure will hang the cluster. If the cluster hangs during a shutdown, enter the following commands on the system console of a system that is still a cluster member:

```
$ Ctrl/P
>>> D SIRR C
>>> C
IPC> Q
IPC> Ctrl/Z
```

10. After the shutdown procedure is finished on all nodes, go to Chapter 7 to begin the upgrade procedure.

7

Upgrading the OpenVMS Alpha Operating System

This chapter describes the following tasks:

- Beginning the upgrade from the operating system CD–ROM
- Specifying the target disk
- Specifying the volume label
- Updating time zone information
- Choosing descriptive help text
- Completing the upgrade
- Performing postupgrade tasks (including booting the upgraded system)
- Installing layered products

7.1 Booting the Operating System CD–ROM

The OpenVMS Alpha Version 7.2 operating system includes procedures that allow you to easily upgrade the operating system using the POLYCENTER Software Installation utility. To get started, boot the OpenVMS Alpha operating system CD–ROM either from your local CD–ROM drive or from a CD–ROM drive connected to the InfoServer, as described in the following sections.

7.1.1 Booting from the Local Drive

To boot the operating system CD–ROM from the local drive, follow these steps:

1. Insert the operating system CD–ROM into the local CD–ROM drive.
2. At the console prompt (>>>), enter the SHOW DEVICE command so you can identify the name of the CD–ROM drive (for example, DKA400:)
3. Enter the boot command in the following format:

   BOOT -FLAGS 0,0 *source-drive*

   Substitute the device name of the CD–ROM drive (as listed in the SHOW DEVICE display) for *source-drive*.

   For example, if the SHOW DEVICE display lists the device name of your CD–ROM drive as DKA400, enter the following command and press the Return key:

   ```
   >>> BOOT -FLAGS 0,0 DKA400
   ```

7.1.2 Booting from the InfoServer

To boot the operating system CD–ROM using the InfoServer, follow these steps:

1. At the console prompt, enter the following command:

   ```
   >>> BOOT -FLAGS 0,0 -FILE APB_072 lan-device-name
   ```

   Note the following conventions:

   - *APB_072* is the file name of the APB program used for the initial system load (ISL) boot program.
   - *lan-device-name* is the name of the local area network (LAN) device Ethernet identified with your computer. For information about the LAN devices your system supports, refer to the following table. For additional information, see the hardware manuals that you received with your Alpha computer and the *OpenVMS Software Product Description*.

Alpha Computer	Ethernet Device	FDDI Device
ALPHAbook 1	EOA0	–
AlphaServer 400 series	EWA0	FWA0
AlphaServer 1000 series	ERA0, EWA0	FRA0
AlphaServer 1000A series	EWA0	FWA0
AlphaServer 1200 series	EWA0	FWA0
AlphaServer 2000 series	ERA0, EWA0	FRA0
AlphaServer 2100, 2100A series	ERA0, EWA0	FRA0
AlphaServer 4100 series	EWA0	FWA0
AlphaServer 8200 series	EXA0, EWA0	FXA0
AlphaServer 8400 series	EXA0, EWA0	FXA0
AlphaStation 200 series	EWA0	FWA0
AlphaStation 400 series	EWA0	FWA0
AlphaStation 500 series	EWA0	FWA0
AlphaStation 600 series	ERA0, EWA0	FWA0
DEC 2000 series	ERA0	–
DEC 3000 series	ESA0	"n/ESA0"
DEC 4000 series	EZA0	–
DEC 7000 series	EXA0	FXA0
DEC 10000 series	EXA0	FXA0
DIGITAL Personal Workstation (DPWS) series	EWA0	FWA0

Note

If you are using a DEC 3000 or 4000 series system, note the following:

- On DEC 3000 series systems, you can boot through the InfoServer with an Ethernet PMAD device or FDDI DEFTA device by specifying the device name as ‘‘*n*/ESA0’’. The value for *n* is the TURBOchannel slot number, which you can obtain by entering the SHOW CONFIGURATION command at the console prompt

(>>>) and examining the display. For more information, see Section A.1.8.

- On DEC 4000 series, you *must* specify the ISL file name in uppercase (APB_072).

---

2. The InfoServer ISL program then displays the following menu:

```
Network Initial System Load Function
Version 1.2

  FUNCTION         FUNCTION
    ID
    1     -        Display Menu
    2     -        Help
    3     -        Choose Service
    4     -        Select Options
    5     -        Stop

Enter a function ID value:
```

3. Respond to the prompts as follows, pressing the Return key after each entry:

   a. Enter 3 for the function ID.

   b. Enter 2 for the option ID.

   c. Enter the service name (ALPHA072).

   A sample display follows:

```
Enter a function ID value: 3 Return

 OPTION          OPTION
   ID
   1     -       Find Services
   2     -       Enter known Service Name

Enter an Option ID value: 2 Return
Enter a Known Service Name: ALPHA072 Return
```

Note

If you boot the OpenVMS Alpha operating system CD–ROM from an InfoServer system but lose your connection during the upgrade procedure (the system is unresponsive and pressing Ctrl/Y does not return you to the menu), do the following:

1. Reboot the OpenVMS Alpha operating system CD–ROM.
2. Enter the DCL environment by choosing option 7 from the menu.
3. Mount the device containing your backup copy of the target disk and the device that is your target disk.
4. Restore the backup copy of your target disk by entering the appropriate BACKUP commands. (See Appendix B for complete information about using MOUNT and BACKUP commands to restore a system disk.)
5. Log out from the DCL environment.
6. Perform the upgrade again by choosing the upgrade option (1) from the menu and following the procedures described in this chapter.

7.2 Performing the Upgrade

The following sections describe how to upgrade from the operating system CD–ROM.

7.2.1 Upgrading from the CD–ROM

After you boot the operating system CD–ROM, choose the upgrade option (1) from the menu displayed on the screen. The display is similar to the following:

```
 OpenVMS (TM) Alpha Operating System, Version V7.2

Copyright (c) 1998 Compaq Computer Corporation.  All rights reserved.


Installing required known files...

Configuring devices...

****************************************************************

You can install or upgrade the OpenVMS Alpha operating system
or you can install or upgrade layered products that are included
on the OpenVMS Alpha operating system CD-ROM.

You can also execute DCL commands and procedures to perform
"standalone" tasks, such as backing up the system disk.

Please choose one of the following:

    1)  Upgrade, install or reconfigure OpenVMS Alpha Version V7.2
    2)  Display products and patches that this procedure can install
    3)  Install or upgrade layered products and patches
    4)  Show installed products
    5)  Reconfigure installed products
    6)  Remove installed products
    7)  Execute DCL commands and procedures
    8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 1
```

The OpenVMS Alpha operating system CD–ROM may contain patch kits. If it does, information similar to the following will be displayed:

```
    The following PATCH kits are present on the OpenVMS Alpha
    distribution media.

---------------------------------- ----------- ----------
PRODUCT                            KIT TYPE    KIT FORMAT
---------------------------------- ----------- ----------
DEC AXPVMS UCXECO_42_1 V1.0        Patch       Sequential
---------------------------------- ----------- ----------

1 item found

    Please consult the OpenVMS Alpha Upgrade and Installation Manual,
    the Release Notes, and the Cover Letter to determine if any or
    all of these patches may be required for your system.
```

7.2.2 Choosing INITIALIZE or PRESERVE

After you choose the upgrade option (if you are upgrading from the operating system CD–ROM) or start the AXPVMS$PCSI_INSTALL command procedure (if you are upgrading from a running OpenVMS Alpha Version 7.2 system), the system displays the following information and prompts:

```
    ************************************************************

    The installation procedure will ask a series of questions.

          () - encloses acceptable answers
          [] - encloses default answers

    Type your response and press the <Return> key.  Type:

          ? - to repeat an explanation
          ^ - to change prior input (not always possible)
          Ctrl/Y - to exit the installation procedure

    There are two choices for Installation/Upgrade:

    INITIALIZE - removes all software and data files that were
        previously on the target disk and installs OpenVMS Alpha.

    PRESERVE -- installs or upgrades OpenVMS Alpha on the target disk
        and retains all other contents of the target disk.

   * NOTE: You cannot use PRESERVE to install OpenVMS Alpha on a disk on
        which OpenVMS VAX or any other operating system is installed.

Do you want to INITIALIZE or to PRESERVE? [PRESERVE])
```

For an upgrade, press the Return key to accept the default (PRESERVE).

7.2.3 Specifying the Target Disk

Next, the procedure asks you for the name of the target disk. If you enter a question mark (?), the system displays a list of devices on your system. Select the appropriate disk and respond to the prompt. For example:

```
You must enter the device name for the target disk on which
    OpenVMS Alpha will be installed.

Enter device name for target disk: (? for choices) dkb400
```

If you select a device that is not available or that cannot be used for some other reason, the system displays information indicating why the device cannot be used. For example, if you enter MKA500, a tape device, a message similar to the following is displayed:

```
MKA500 is not a disk device
```

7.2.4 Specifying the Volume Label

The system then prompts you for the volume label and asks if the information is correct. You can accept the default label assigned by the system (AXPVMSSYS) or specify a different volume label (with a limit of 12 characters that can be letters A-Z, numbers 0-9, dollar signs ($), hyphens (-), or underscores (_)).

Note

Compaq strongly recommends that the volume labels for all disks on your system or OpenVMS Cluster have unique labels. If a disk that has the same label as the system disk is mounted, various OpenVMS components will not function as intended.

After you select the volume label, the target disk is mounted and page and swap files are created. For example:

```
    DKB400: is now labeled ALPHAUPGIV.

Do you want to keep this label? (Yes/No) [Yes]

    OpenVMS Alpha will be upgraded on DKB400:.
```

7.2.5 Checking Related Software

At this point the upgrade performs checks of some related software products.

7.2.5.1 Spiralog

If your system contains a version of Spiralog lower than Version 1.2, the following message is displayed:

```
    The target system contains a version of SPIRALOG that is not
    compatible with this version of the operating system.
    SPIRALOG must be removed before upgrading OpenVMS Alpha.

    Termination is strongly recommended.

Do you want to terminate? (Yes/No) [YES]
```

Note that Spiralog will not work with OpenVMS Alpha Version 7.2. If you have any version of Spiralog installed on your system, uninstall it before upgrading to OpenVMS Alpha Version 7.2.

7.2.5.2 AMDS

Beginning with OpenVMS version 7.2 and AMDS version 7.2, certain parts of AMDS that were previously supplied with the layered product kit are now incorporated into OpenVMS. Because of this, prior versions of AMDS must be removed.

If the upgrade procedure detects a prior version of AMDS, it will display the following message and automatically remove the prior version of AMDS. Note that you must reinstall AMDS if you wish to continue using it.

```
The target system contains a version of DEC AMDS that is not
compatible with this version of the operating system.

If you continue AMDS will be removed.  A current version of
AMDS can be installed after the upgrade completes.
```

7.2.5.3 PATHWORKS

If PATHWORKS is installed on the system, OpenVMS Version 7.2 requires PATHWORKS Version V6.0B or later. The installation determines the PATHWORKS version and displays one of the following messages if an earlier version of PATHWORKS is present.

If PATHWORKS Version 5 or earlier is present:

```
PATHWORKS V5 is installed on the target system.

This version of PATHWORKS will not work on OpenVMS V7.2.
You must upgrade to PATHWORKS V6.0B or later, or disable
PATHWORKS on the target system, before upgrading OpenVMS.

Please refer to the release notes for additional information.

Do you want to continue? (Yes/No) [NO]
```

If PATHWORKS Version 6.0 or 6.0A is present:

```
PATHWORKS V6.0-000 is installed on the target system.

This version of PATHWORKS is not supported on OpenVMS V7.2.
PATHWORKS V6.0B and later are supported on OpenVMS V7.2.
You may wish to upgrade to PATHWORKS V6.0B or later before
upgrading OpenVMS.

Please refer to the release notes for additional information.

Do you want to continue? (Yes/No) [NO]
```

In both cases the default is to terminate the upgrade. You must explicitly enter Yes and press the Return key to continue.

7.2.6 Checking OpenVMS Cluster Membership

The procedure now asks if your system will be part of a cluster. The display is similar to the following:

```
Will this system be a member of an OpenVMS Cluster? (Yes/No) Yes
```

Unlike an installation, answering Yes to this question will **not** cause SYS$MANGER:CLUSTER_CONFIG.COM to be run. However, correct cluster membership information is required by the upgrade procedure.

7.2.7 Becoming an OpenVMS Galaxy Instance

The procedure next asks if your system will be an instance in an OpenVMS Galaxy. The display is similar to the following:

```
Will this system be an instance in an OpenVMS Galaxy? (Yes/No) Yes
```

If you answer Yes to this question, and you also answered Yes to the OpenVMS Cluster question, then information about required remedial kits is displayed.

For compatibility with OpenVMS Galaxy, any systems in the OpenVMS Cluster that are running versions of OpenVMS prior to Version 7.1-2 must have a remedial kit installed. The following display indicates the correct remedial kits for various OpenVMS Alpha and VAX systems:

```
For compatibility with OpenVMS Galaxy, any systems in the OpenVMS Cluster
that are running versions of OpenVMS prior to V7.1-2 must have a
remedial kit installed.  The appropriate kit from the following list
must be installed on all system disks used by these systems.
(Later versions of these remedial kits may be used if available.)

     Alpha V7.1 and V7.1-1xx         ALPSYSB02_071
     Alpha V6.2 and V6.2-1xx         ALPSYSB02_062

     VAX V7.1                        VAXSYSB01_071
     VAX V6.2                        VAXSYSB01_062
```

7.2.8 Memory Channel Information

This section contains information specific to becoming a cluster member in a MEMORY CHANNEL environment.

The MEMORY CHANNEL remedial kit (ALPMC01_071 and later) changed the data structures used with MEMORY CHANNEL. This change is not backwardly compatible and requires special considerations for MEMORY CHANNEL when upgrading OpenVMS from a version earlier than Version 7.1-2 to Version 7.1-2 (or later), under the following conditions:

- Your system disk will be part of an OpenVMS Cluster, and
- One or more of the systems in the OpenVMS Cluster has a MEMORY CHANNEL adapter, and
- Either:
  - Your OpenVMS Cluster uses multiple system disks, or
  - You will be performing a rolling upgrade

If your target system is already at OpenVMS Version 7.2 or higher, you have already seen this information. In this case, or if you indicated that the target system will not be a member of an OpenVMS Cluster, the procedure jumps to Section 7.2.9. Otherwise, it proceeds as follows:

```
    An OpenVMS Cluster may use more than one system disk, either on a
    continuing basis, or only during a rolling upgrade.

Will the OpenVMS Cluster use more than one system disk? (Yes/No) Yes
```

If you answer Yes to this question, the procedure provides information about MEMORY CHANNEL adapters, as follows:

```
    A MEMORY CHANNEL adapter is a device that allows systems in an
    OpenVMS Cluster to be connected (usually through a MEMORY CHANNEL hub)
    to provide high speed communications among nodes in the OpenVMS Cluster.
```

If the procedure can detect that a MEMORY CHANNEL adapter (MCA) is present, it displays the following message:

```
This system has a Memory Channel adapter.
```

Otherwise, it displays a question similar to the following:

```
Is a MEMORY CHANNEL adapter installed on this system
or on any other system in the OpenVMS Cluster?
(Yes/No) yes
```

If you answer Yes to this question, or your system has a MEMORY CHANNEL adapter, the following information is displayed.

```
    You will be using multiple system disks and MEMORY CHANNEL adapters.
    This requires special consideration in order to avoid data corruption.

    Either the ALPMC01_071 TIMA kit must be installed on all system disks,
    or you must not use the MEMORY CHANNEL until after all system disks in
    the OpenVMS Cluster have been upgraded to the new OpenVMS release and all
    systems have rebooted from the upgraded system disks.

    You can prevent using MEMORY CHANNEL in one of two ways:

        o Power off the MEMORY CHANNEL hub, if one is used, or

        o Disconnect the MEMORY CHANNEL cable, if using a virtual hub.

    You must NOT POWER UP OR RECONNECT until after all system disks in
    the OpenVMS Cluster have been upgraded to the new OpenVMS release and all
    systems have rebooted from the upgraded system disks.

    You can search [VMS$COMMON.SYSUPD]VMSINSTAL.HISTORY for ALPMC on any
    system disk to determine if the TIMA kit is installed on that disk.


    Answer the next question with a "?" if you wish to search
    VMSINSTAL.HISTORY for the ALPMC01_071 TIMA kit.

Do you have the ALPMC01_071 TIMA kit installed on all systems disks that
are part of the OpenVMS Cluster and that are prior to OpenVMS V7.2?
(Yes/No) No
```

If you answer with a question mark (?), the OpenVMS SEARCH command is used to look in VMSINSTAL.HISTORY for the ALPMC01_071 remedial kit. If the kit is found, the line in VMSINSTAL.HISTORY that contains it is displayed. If it is not found, the message ‘‘No strings matched’’ is displayed. In either case, the question is repeated.

Answer Yes if the ALPMC01_071 remedial kit is installed as required on all system disks. Otherwise answer No. If you answer No, the procedure continues as follows:

```
Have you powered off the MEMORY CHANNEL hub?
(Or disconnected the MEMORY CHANNEL cable?)
(Yes/No) No
```

Answer Yes if you have powered off the MEMORY CHANNEL hub or disconnected the MEMORY CHANNEL cable. Otherwise, answer No. If you answer No, the procedure continues as follows:

```
    Before proceeding with the OpenVMS upgrade, you must either

        o Install the ALPMC01_071 remedial kit on all system disks
          that are part of OpenVMS Cluster, or

        o Take action to prevent using MEMORY CHANNEL.

    Termination is strongly recommended.

Do you want to terminate? (Yes/No) [YES]
```

Note

If termination is recommended, do not attempt to continue. Follow the instructions provided in this section and with the ALPMC01_071 remedial kit. If you continue, your MEMORY CHANNEL will not work correctly and you will encounter problems, including possible data corruption.

The upgrade will not recommend terminating if

- The system will not be a member of an OpenVMS Cluster, or
- The OpenVMS Cluster does not use more than one system disk, or
- There is no MEMORY CHANNEL adapter in the OpenVMS Cluster, or
- The ALPMC01_071 remedial kit is installed on all systems disks in the OpenVMS Cluster, or
- You have powered down the MEMORY CHANNEL hub or disconnected the MEMORY CHANNEL cables

7.2.9 Upgrading Windowing and Networking Products

The procedure next selects the following Compaq software that is installed on your system:

- DECwindows Motif for OpenVMS Alpha
- DECnet-Plus for OpenVMS Alpha *or* DECnet Phase IV for OpenVMS Alpha
- DIGITAL TCP/IP Services for OpenVMS

Note

If you do not have DECnet for OpenVMS Alpha software installed on your system, you can install that software during the upgrade. Note, however, that you *cannot* have DECnet-Plus and DECnet Phase IV concurrently installed on your system.

Once you have DECnet-Plus and TCP/IP installed on your system, you can run DECnet applications over your TCP/IP network. Please see the *DECnet-Plus for OpenVMS Management Guide* for more information on DECnet over TCP/IP.

Beginning with OpenVMS V7.2, a new implementation of DIGITAL TCP/IP Services is available. This new implementation replaces the

UCX product. Older, UCX versions of DIGITAL TCP/IP Services can be upgraded to this new implementation. Note, however, that you CANNOT have both the new TCPIP implementation and the older UCX implementation concurrently installed on your system.

If you are upgrading DECnet, the procedure removes the existing version of DECnet during the upgrade. For example, if DECnet Phase IV is installed on your system, and you upgrade to DECnet-Plus, DECnet Phase IV will be removed during the upgrade procedure.

The display is similar to the following:

```
If necessary, the following products will be upgraded along with
the OpenVMS operating system:

    o DECwindows Motif for OpenVMS Alpha
    o DECnet-Plus for OpenVMS Alpha
    o DECnet Phase IV for OpenVMS Alpha
    o Digital TCP/IP Services for OpenVMS

If you want to add or delete these products, you can do so later in
the upgrade by answering "NO" to the following question:

    "Do you want the defaults for all product options?"


Beginning with OpenVMS V7.1, DECnet-Plus is provided with the
OpenVMS operating system.  Compaq recommends that DECnet
users install DECnet-Plus.  DECnet Phase IV applications are
supported by DECnet-Plus.

DECnet Phase IV is also provided as an option.  Support for
DECnet Phase IV is available through a Prior Version Support
Contract available through Compaq MCS Services.

Once you have DECnet-Plus and TCP/IP installed on your
system, you can run DECnet applications over your
TCP/IP network.  Please see the DECnet-Plus for OpenVMS
Management Guide for more information on DECnet over
TCP/IP.


Do you want to install DECnet-Plus for OpenVMS Alpha V7.2? (Yes/No) [YES] n

DECnet Phase IV for OpenVMS Alpha is installed on your system.
It will be upgraded.

Beginning with OpenVMS V7.2, a new implementation of Digital
TCP/IP Services is available.  This new implementation replaces
the UCX product.  Older, UCX version of Digital TCP/IP Services
can be upgraded to this new implementation.

DIGITAL TCP/IP Services for OpenVMS is not installed on your system.
It will not be installed.
```

Some of the windowing and networking products may have versions installed that are below the current versions, but that are still supported on OpenVMS Version 7.2. In this case you will see messages similar to the following:

```
A supported version of DECwindows Motif is already installed.
You can keep the installed version or upgrade to V1.2-5.

Do you want to upgrade to V1.2-5? (Yes/No) [YES]
```

You can choose to keep the currently-installed version, or to upgrade to the latest version supplied with OpenVMS Version 7.2.

7.2.10 Updating Time Zone Information

For local time zone support to work correctly, the time zone that accurately describes the location you want to be considered as your default time zone must be set. In addition, your system must be correctly configured to use a valid OpenVMS time differential factor (TDF). If both of these are already set, the procedure continues with Section 7.2.11. If either of these are not set, you are required to set them at this point.

The procedure displays a series of time zone menus and prompts you to make selections from each. You begin by selecting the desired time zone from the main time zone menu. If you do not select a time zone, the default is Greenwich Mean Time (GMT).

Some time zone choices cause an additional menu to be displayed. This happens when the time zone you select has subcomponents. For example, if you choose the United States (US) time zone from the main menu, a second menu displays the specific time zones within the United States. You then select the menu item that best represents the desired time zone.

The procedure then prompts you for the TDF. The TDF is the difference between your system time and Coordinated Universal Time (UTC), which is an international standard (similar to Greenwich Mean Time) for measuring time of day. The procedure supplies a default for TDF.

A sample display follows:

```
Configuring the Local Time Zone


TIME ZONE SPECIFICATION -- Main Time Zone Menu

  1) Australia       11) GMT            21) Mexico         31) Turkey
  2) Brazil          12) Greenwich      22) NZ             32) UCT
  3) CET             13) Hongkong       23) NZ-CHAT        33) US
  4) Canada          14) Iceland        24) Navajo         34) UTC
  5) Chile           15) Iran           25) PRC            35) Universal
  6) Cuba            16) Israel         26) Poland         36) W-SU
  7) EET             17) Jamaica        27) ROC            37) WET
  8) Egypt           18) Japan          28) ROK            38) Zulu
  9) Factory         19) Libya          29) Singapore
 10) GB-Eire         20) MET            30) SystemV

  0) None of the above

Select the number above that best represents the desired time zone: 33

You selected US as your time zone.
Is this correct? (Yes/No) [YES]:

US Time Zone Menu

   1) Alaska          4) Central         7) Hawaii          10) Mountain
   2) Aleutian        5) East-Indiana    8) Indiana-Starke  11) Pacific
   3) Arizona         6) Eastern         9) Michigan        12) Samoa

   0) None of the above

Select the number above that best represents the desired time zone: 6

You selected US/Eastern as your time zone.
Is this correct? (Yes/No) [YES]:

    Default Time Differential Factor for standard time is -5:00.
    Default Time Differential Factor for daylight saving time is -4:00.

    The Time Differential Factor (TDF) is the difference between your
    system time and Coordinated Universal Time (UTC).  UTC is similar
    in most respects to Greenwich Mean Time (GMT).
```

```
    The TDF is expressed as hours and minutes, and should be entered
    in the hh:mm format.  TDFs for the Americas will be negative
    (-3:00, -4:00, etc.); TDFs for Europe, Africa, Asia, and Australia
    will be positive (1:00, 2:00, etc.).

Is daylight savings time in effect? (Yes/No): y

Enter the Time Differential Factor [-4:00]:

    NEW SYSTEM TIME DIFFERENTIAL FACTOR = -4:00.

Is this correct? [Y]:
```

For more information about TDF and local time zone support, see the *OpenVMS System Manager's Manual*.

7.2.11 Choosing Descriptive Help Text

The system next prompts you as follows:

```
     The installation operation can provide brief or detailed descriptions.
     In either case, you can request the detailed descriptions by typing "?".

Do you always want detailed descriptions? (Yes/No) [No]
```

If you answer Yes, the system will display additional explanatory text with each prompt.

7.2.12 Configuration Options

If you are using the OpenVMS Alpha Version 7.2 CD–ROM and have selected a target disk that already has Version 7.2 installed, you are presented with several configuration options. A sample display follows:

```
Version V7.2 of the OpenVMS operating system is already installed
on the target disk.  You may choose one of the following actions:

  o Reconfigure the OpenVMS platform.
    This action will allow you to change your selections of which of the
    windowing and network products you included with your OpenVMS operating
    system installation.

  o Reconfigure the OpenVMS operating system.
    This action will allow you to change your choices about which
    options you included for the OpenVMS operating system.

  o Reinstall the OpenVMS operating system.
    This action will cause ALL operating system  files to be replaced.
    You can also change your choices about which options you included
    for the OpenVMS operating system.

    Reinstall will take longer than Reconfigure.  Reinstall may be
    appropriate if you suspect that files in the operating system,
    or in the windowing and network products have become corrupted.


If you want to reinstall any of the windowing and network products,
choose "Install or upgrade layered products and patches" (option 3)
from the main menu.

If you want to change your choices about which options you included
for any of the windowing and network products, choose "Reconfigure
installed products" (option 5) from the main menu.

Please choose one of the following:

    1)  Reconfigure the OpenVMS platform.
    2)  Reconfigure the OpenVMS operating system.
    3)  Reinstall the OpenVMS operating system.
    4)  Return to the Main Menu (abort the upgrade/installation).

Enter choice or ? for help: (1/2/3/4/?)
```

7.2.13 Selecting Components

As you begin the upgrade procedure, the system asks if you want all the default values, meaning all the files and subgroups of files for each component included in the operating system. The display is similar to the following:

```
The following product has been selected:
     DEC AXPVMS OPENVMS V7.2         Platform (product suite)


Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

DEC AXPVMS OPENVMS V7.2: OpenVMS and related products platform

    COPYRIGHT (c) 12-SEP-1998 -- All rights reserved

    Compaq Computer Corporation

Do you want the defaults for all options? [YES]

    DEC AXPVMS DECNET_PHASE_IV V7.2: DECNET_PHASE_IV

      Support addendum to DECnet Phase IV service contract required

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

During an upgrade, the POLYCENTER Software Installation utility defines ''default values'' as the values that you selected when you last installed or upgraded the OpenVMS Alpha operating system on your system. Therefore, before you respond to the prompt, note the following:

- If you answer YES (by pressing the Return key) to accept the default values, you will receive the same components that you selected when you last installed or upgraded the system (instead of *all* the components currently available) plus any new components that were not in the previous version of the OpenVMS Alpha operating system.
- If you want to include or exclude any components differently from the last installation or upgrade, you must answer NO and then respond to the prompts for *each* option, even those that you are not changing.
- If you want to review the current defaults first, you can answer NO. Then answer YES when the system asks if you want to view the values.

  If you review the defaults and are satisfied, answer YES to the prompt asking if you are satisfied with the values. However, if you want to make changes, answer NO to that question and then answer YES when the system asks if you want to reenter the values.

When selecting components, note the following as well:

- Whether you choose all the default values or select individual files, the system will allow you to view your selections and make changes (if necessary).
- If you are not sure whether you want certain components, request help by entering a question mark (?) at the prompt for that component (or group of components).
- OpenVMS Management Station software is automatically installed on your OpenVMS system disk when you accept all the default values. If you do not accept the default values, you must select the OpenVMS Management Station component (server and client files) if you plan to use that product. After the installation is complete, you can then prepare your OpenVMS Alpha system and your PC to run OpenVMS Management Station by following the procedures described in Appendix D.

- If you decide after the upgrade to change which OpenVMS Alpha operating system components you want installed on your system, you must reconfigure the installation as described in Section 1.3.3.2.
- After you boot the upgraded system disk and log in, you can obtain information about individual system files by entering HELP SYSTEM_ FILES at the dollar sign prompt ($).

For a complete list of components included with the OpenVMS Alpha Version 7.2 operating system, see Section 3.5.3.

7.2.14 Completing the Upgrade

When you have answered all the prompts and selected the components you want installed, the system allows you to review your selections (and make changes if necessary) and then displays messages about the following:

- Notification that DECwindows Motif for OpenVMS Alpha, DECnet-Plus for OpenVMS Alpha, DECnet Phase IV for OpenVMS Alpha, or DIGITAL TCP/IP Services for OpenVMS software has been upgraded (or installed) on your system.
- Notification that the upgrade has been completed.
- Information about running AUTOGEN.
- The menu.

The following is a sample display.

Note

If you perform two installations at the same time to systems connected via MEMORY CHANNEL, you may see a message similar to the following every 5 seconds:

```
%PMA0 CPU00: 30-OCT-1998 14:58:40 Remote System Conflicts with
Known System - REMOTE NODE
%PMA0 CPU00: 30-OCT-1998 14:58:45 Remote System Conflicts with
Known System - REMOTE NODE
```

Disregard the message. The installation or upgrade will proceed normally and the messages will not be present when the system reboots with its real node name.

```
Do you want to review the options? [NO]

Execution phase starting ...

The following products will be installed:
     DEC AXPS DECNET_PHASE_IV V7.2              Layered Product
     DEC AXPVMS OPENVMS V7.2                    Platform (product suite)
     DEC AXPVMS VMS V7.2                        Operating System

The following products will be removed:
     DEC AXPVMS DECNET_PHASE_IV G7.1            Layered Product
     DEC AXPVMS OPENVMS G7.1                    Platform (product suite)
     DEC AXPVMS VMS G7.1                        Operating System

Portion Done: 0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%

The following products have been installed:
     DEC AXPS DECNET_PHASE_IV V7.2              Layered Product
     DEC AXPVMS OPENVMS V7.2                    Platform (product suite)
     DEC AXPVMS VMS V7.2                        Operating System
```

```
The following products have been removed:
     DEC AXPVMS DECNET_PHASE_IV V7.1            Layered Product
     DEC AXPVMS OPENVMS V7.1                    Platform (product suite)
     DEC AXPVMS VMS V7.1                        Operating System

    The upgrade is now complete.

    When the newly upgraded system is first booted, a special
    startup procedure will be run.  This procedure will:

        o  Run AUTOGEN to set system parameters.
        o  Reboot the system with the newly set parameters.

    You may shut down now or continue with other operations.


  Process AXPVMS_INSTALL logged out at 12-SEP-1998 15:34:22.47

Press Return to continue...

    ************************************************************

    You can install or upgrade the OpenVMS Alpha operating system
    or you can install or upgrade layered products that are included
    on the OpenVMS Alpha operating system CD-ROM.

    You can also execute DCL commands and procedures to perform
    "standalone" tasks, such as backing up the system disk.

    Please choose one of the following:

        1)  Upgrade, install or reconfigure OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system
```

7.2.15 What to Do Next

If you want to install layered products, go to the next section.

If you do not want to install layered products or perform any other operations prior to booting the upgraded disk, do the following:

1. Shut down the system by choosing the shutdown option (8) from the menu.
2. Go to Section 7.4.

7.3 Installing Layered Products

You can use the menu system included on the operating system CD–ROM to install certain layered products with the POLYCENTER Software Installation utility. You can view a list of the layered products that can be installed in this way by choosing option 2 from the menu. (To install layered products that are not listed, see Chapter 4 and the installation documentation for each layered product.)

You may see the following product name while installing layered products:

```
DEC AXPVMS UCX V4.2-PLACEHOLDER
```

Do not attempt to install this kit. This is a "dummy" that is needed for technical reasons to facilitate upgrading from the prior UCX implementation of DIGITAL TCP/IP Services to the new implementation.

If you do attempt to install this kit, the following message will be displayed:

```
The UCX implementation of TCP/IP Services is obsolete and is not
supported on OpenVMS V7.2 and higher versions.

Starting with OpenVMS V7.2, the UCX implementation of TCP/IP
services is replaced by the new TCPIP product.

This is a placeholder kit to satisfy OpenVMS upgrade requirements
so that UCX can be automatically upgraded to TCPIP.

You cannot use this kit to install UCX.
```

The installation will then terminate.

You can install (or upgrade to) the new implementation of DIGITAL TCP/IP services, version 5.0, as part of the OpenVMS upgrade. If you wish to install version 5.0 separately, choose the product:

```
DEC AXPVMS TCPIP V5.0-9
```

To install layered products using the POLYCENTER Software Installation utility, choose option 2 to view the list and then option 3 to perform the installation. For example:

```
    Please choose one of the following:

        1)  Upgrade, install or reconfigure OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 2

        The following versions of the OpenVMS operating system, the
        DECwindows graphical user interface and network products.
        are available on the OpenVMS Distribution compact disk.
        They can be installed by selecting choice 1:

    DEC AXPVMS VMS version V7.2
    DEC AXPVMS DWMOTIF version V1.2-5
    DEC AXPVMS DECNET_OSI version V7.2
    DEC AXPVMS DECNET_PHASE_IV version V7.2
    DEC AXPVMS TCPIP version V5.0-9

        The following Layered Product kits are available on the OpenVMS
        Distribution Compact Disk.  They can be installed by selecting
        choice 3.  If already installed, they can be reconfigured by
        selecting choice 5, or removed by selecting choice 6.

    ---------------------------------- ----------- ----------
    PRODUCT                            KIT TYPE    KIT FORMAT
    ---------------------------------- ----------- ----------
    DEC AXPVMS DECNET_OSI V7.2         Full LP     Sequential
    DEC AXPVMS DECNET_PHASE_IV V7.2    Full LP     Sequential
    DEC AXPVMS DWMOTIF V1.2-5          Full LP     Sequential
    DEC AXPVMS TCPIP V5.0-9            Full LP     Sequential
    DEC AXPVMS UCX V4.2-99PLACEHOLDER  Full LP     Sequential
    ---------------------------------- ----------- ----------

    5 items found

    Press Return to continue...

    ****************************************************************

    You can install or upgrade the OpenVMS Alpha operating system
    or you can install or upgrade layered products that are included
    on the OpenVMS Alpha operating system CD-ROM.
```

```
    You can also execute DCL commands and procedures to perform
    "standalone" tasks, such as backing up the system disk.

    Please choose one of the following:

        1)  Install or upgrade OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 3

    ********************************************************

    If you choose to install or upgrade to DECwindows Motif,
    please note the following:

      o If you did not select the OpenVMS DECwindows base support
        and workstation files options, DECwindows Motif will not run.
        You must add these options to use DECwindows Motif.

      o If you are upgrading DECwindows Motif from Version 1.1 and
        want to save the OSF/Motif Release 1.1.3 programming files,
        DO NOT upgrade now.  Instead, see the DECwindows Motif
        Installation Manual and follow the instructions for running
        PCSI_INSTALLATION.COM.

    If you choose to install or upgrade DECnet-Plus or DECnet Phase IV,
    please note the following:

      o If you did not select the OpenVMS DECNET option, neither version
        of DECnet will run.  You must add this option to use DECnet.


    You must enter the device name for the target disk on which
    the layered product(s) install will be performed.

Enter device name for target disk: (? for choices) DKB400

    DKB400: is labeled ALPHAUPGIV.


    The installation can provide brief or detailed descriptions.
    In either case, you can request the detailed descriptions by typing "?".

    Do you always want detailed descriptions? (Yes/No) [No]

       1 - DEC AXPVMS DECNET_OSI V7.2          Layered Product
       2 - DEC AXPVMS DECNET_PHASE_IV V7.2     Layered Product
       3 - DEC AXPVMS DWMOTIF V1.2-5           Layered Product
       4 - DEC AXPVMS TCPIP V5.0-9             Layered Product
       5 - DEC AXPVMS UCX V4.2-99PLACEHOLDER   Layered Product
       6 - All products listed above
       7 - Exit

    Choose one or more items from the menu separated by commas:
```

If you do not want to perform any other operations after you install the layered products, do the following:

1. Shut down the system by choosing the shutdown option (8) from the menu.
2. Go to the next section to perform specific tasks after the system shuts down.

7.4 What to Do After the Shutdown

After the system shuts down, you need to perform certain tasks, depending on the configuration of your system and the type of upgrade you are performing. Refer to the appropriate section.

Note

When you boot your system following the shutdown (regardless of the type of upgrade and configuration), note that your system will automatically run AUTOGEN and boot again.

7.4.1 Standalone Upgrade

If you are upgrading a standalone system:

1. Reboot the system.
2. Log in to the system.
3. Go to Chapter 8 to perform additional postupgrade procedures.

7.4.2 Concurrent OpenVMS Cluster Upgrade

If you are performing a concurrent upgrade in an OpenVMS Cluster environment:

IF ...	THEN ...
you have one system disk,	do the following: 1. Reboot each system that uses the upgraded disk. 2. Go to Chapter 8.
you have multiple system disks,	do the following: 1. Repeat the upgrade process for each system disk in the cluster, beginning with the preupgrade tasks described in Chapter 5. 2. Reboot each system in the cluster. 3. Log in to an upgraded system. 4. Go to Chapter 8 to perform additional postupgrade procedures.

7.4.3 Rolling OpenVMS Cluster Upgrade

If you are performing a rolling upgrade in an OpenVMS Cluster environment:

1. Log in to the upgraded system.
2. Go to Chapter 8 to perform additional postupgrade procedures. (You will reboot the other systems that boot from the upgraded disk after you complete those tasks.)

8

After Upgrading the OpenVMS Alpha Operating System

After you upgrade the OpenVMS Alpha operating system, you need to perform several important tasks before you can use the system. These tasks, described in the order in which you perform them, are as follows:

- Reforming the shadow set (if applicable)
- Registering new licenses
- Examining the AUTOGEN report file
- Modifying the system parameters file (MODPARAMS.DAT)
- Examining your command procedures
- Decompressing system libraries
- Testing the system with UETP, the user environment test package
- Adding and removing operating system files
- Preparing your OpenVMS Alpha system and your PC to run OpenVMS Management Station
- Installing layered products
- Backing up the customized system disk
- Rebooting cluster members (if applicable)
- Running AUTOGEN
- Completing the postupgrade checklist

8.1 Reforming the Shadow Set

If you have upgraded a disk in a volume shadowing environment, you must now reform the shadow set as follows:

1. Enter the SHOW DEVICE D command to display a list of disks available on your system. For example:

```
$ SHOW DEVICE D

Device                  Device          Error    Volume         Free  Trans Mnt
 Name                   Status          Count     Label        Blocks Count Cnt
$11$DKB100:    (NODE1)  Online              0
$11$DKB200:    (NODE1)  Mounted             0      ALPHA070     918150    1  31
```

2. Enter a command in the following format:

```
$ MOUNT/CONFIRM/SYSTEM DSAn: /SHADOW=(upgraded-disk:,new-member:) volume-label
```

Note the following conventions:

- DSA*n*: is the virtual unit name of the shadow set.
- *upgraded-disk:* is the name of the shadowed system disk you just upgraded.
- *new-member:* is the name of the disk you want to add as a member of the shadow set.
- *volume-label* is the volume label of the shadowed system disk you just upgraded.

Note

When you reform the shadow set, the contents of the new member are replaced by the contents of the disk you upgraded. Specifying the /CONFIRM qualifier reminds you of this fact, confirming that you are specifying the correct name of a disk that either is blank or contains files you no longer need.

Example

```
$ MOUNT/CONFIRM/SYSTEM DSA54: /SHADOW=($11$DKB200:,$11$DKB100:)
ALPHA072

%MOUNT-F-SHDWCOPYREQ, shadow copy required
Virtual Unit - DSA54 Volume label ALPHA072
     Member                   Volume label Owner UIC
     $11$DKB100:  (NODE1)     SCRATCH      [100,100]
Allow FULL shadow copy on the above member(s)? [N]: YES
```

8.2 Registering New Licenses

If you need to register new OpenVMS Alpha or layered product licenses, you can do so by entering the following command:

```
$ @SYS$UPDATE:VMSLICENSE
```

You can also use the LICENSE REGISTER command.

For information about registering licenses, see the following:

- Section 3.4 in Chapter 3
- Appendix C
- The *OpenVMS License Management Utility Manual*

8.3 Examining the AUTOGEN Report File

When AUTOGEN runs, it writes informational and, if necessary, warning messages to the file SYS$SYSTEM:AGEN$PARAMS.REPORT. You should examine the contents of this report file.

To view AGEN$PARAMS.REPORT on your screen, enter the following command and press the Return key:

```
$ TYPE SYS$SYSTEM:AGEN$PARAMS.REPORT
```

(You can also print this file or examine it using the EDIT/READ_ONLY command.)

For more information on AGEN$PARAMS.REPORT, see the *OpenVMS System Manager's Manual*.

If the report includes a message similar to the following, you might need to modify the size of the page, swap, or dump file:

```
%AUTOGEN-W-DSKSPC, The disk on which DKA0:[SYS0.SYSEXE]PAGEFILE.SYS
         resides would be over 95% full if it were modified to hold 20000
         blocks.
```

For more information about modifying the sizes of the page, swap, and dump files, see the next section.

8.4 Modifying the System Parameters File

Review the file SYS$SYSTEM:MODPARAMS.DAT. The upgrade procedure created a new version of this file. The old version is named SYS$SYSTEM:MODPARAMS.DAT_OLD. The new MODPARAMS.DAT file contains all the parameters in the old file, plus various parameters that the upgrade procedure added to ensure that all necessary system parameters are properly propagated from the prior version of OpenVMS. The upgrade procedure also adds comment lines to explain the source of the parameters in each section of the new MODPARAMS.DAT file.

Note that the old MODPARAMS.DAT is included in the new MODPARAMS.DAT each time an upgrade is performed. Because of this, if MODPARAMS.DAT is not reviewed and ''cleaned up'' after each upgrade, it will eventually contain many levels of duplicated parameters. For this reason, you should review MODPARAMS.DAT after each upgrade. This allows you to eliminate the duplication. You can also take this opportunity to modify any parameters, if necessary.

The following two sections are examples of instances where you need to modify parameters in MODPARAMS.DAT.

8.4.1 System File Sizes

AUTOGEN sets the following files at sizes appropriate for your system:

[SYSEXE]SYSDUMP.DMP
[SYSEXE]PAGEFILE.SYS
[SYSEXE]SWAPFILE.SYS

If you have special workloads or configurations, you can specify different sizes for these files by performing the following steps:

1. Log in to the SYSTEM account.
2. Enter the following command:

   ```
   $ @SYS$UPDATE:AUTOGEN SAVPARAMS TESTFILES
   ```

3. If the file sizes displayed need to be adjusted, add symbols to the MODPARAMS.DAT file (described in detail in the *OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems*) and repeat step 2 until you are satisfied with the file sizes.
4. When you are satisfied with the file sizes, enter the following command to ensure that the modified system files are installed when the system is rebooted:

   ```
   $ @SYS$UPDATE:AUTOGEN GENPARAMS REBOOT
   ```

8.4.2 OpenVMS Cluster Parameters

If you are upgrading an OpenVMS Cluster system, note the following:

- The upgrade procedure creates a new MODPARAMS.DAT for system root on your system disk. Normally, there is one root for each Alpha computer that boots from the system disk. You must review each of these MODPARAMS.DAT files.

  The MODPARAMS.DAT file for the system on which you are running is located in SYS$SYSTEM:MODPARAMS.DAT. The MODPARAMS.DAT files for other roots on the same system disk can be found in SYS$SYSDEVICE:[SYS*x*.SYSEXE]MODPARAMS.DAT, where *x* represents the root number; for example, SYS0, SYS1, SYS2, and so forth. (Valid root numbers may include hexadecimal digits—SYSA, SYSB, and so forth.)

- Be sure the EXPECTED_VOTES value is correct. That value is the sum of all VOTES in the cluster. For example, if there are five Alpha computers in the cluster and each has one VOTE, the value is 5.

- As you reboot each Alpha computer, AUTOGEN runs automatically. The cluster forms when you have booted enough computers to attain cluster quorum.

8.5 Examining Your Command Procedures

The upgrade procedure retains the site-specific versions of the following files located in the [VMS$COMMON] directory:

```
[SYSMGR]LAT$SYSTARTUP.COM
[SYSMGR]LOGIN.COM
[SYSMGR]SYCONFIG.COM
[SYSMGR]SYLOGICALS.COM
[SYSMGR]SYLOGIN.COM
[SYSMGR]SYPAGSWPFILES.COM
[SYSMGR]SYSECURITY.COM
[SYSMGR]SYSHUTDWN.COM
[SYSMGR]SYSTARTUP_VMS.COM
[SYSMGR]TFF$SYSTARTUP.COM
[SYSMGR]WELCOME.TXT
[SYS$STARTUP]ESS$LAST_STARTUP.DAT
```

The upgrade procedure may provide new templates for some of these files with the .TEMPLATE extension. The new templates might include features that are not in your site-specific files. Check the templates against your site-specific files and edit your files as necessary.

8.6 Testing the System with UETP

The User Environment Test Package (UETP) is a software package designed to test whether the OpenVMS Alpha operating sytem is installed correctly. As part of the postupgrade procedure, Compaq recommends that you run UETP to verify the upgrade.

For complete information about using UETP, see the *OpenVMS System Manager's Manual*.

8.7 Decompressing System Libraries

Decompressing the system libraries gives the system faster access to them. The decompressed libraries require several thousand additional blocks of disk space for all libraries to be decompressed. You use the LIBDECOMP.COM procedure to decompress the libraries.

8.7.1 Determining Disk Space

To find out how much disk space you have, enter the following command and press the Return key:

```
$ SHOW DEVICE SYS$SYSDEVICE
```

If you have approximately 30,000 free blocks on the disk, you can decompress the libraries. Note that you can choose to decompress only the libraries that are used frequently.

8.7.2 Methods of Using LIBDECOMP.COM

You can use the LIBDECOMP.COM procedure to decompress libraries in three ways:

- Entering a command and responding to prompts from the procedure
- Entering an interactive command
- Entering a batch command

The following three sections describe each method.

Note

Before you use the LIBDECOMP.COM procedure, be sure you are logged in to the SYSTEM account.

8.7.3 Responding to LIBDECOMP.COM Prompts

If you want to decompress libraries by responding to prompts from the LIBDECOMP.COM procedure, do the following:

1. Enter the following command and then press the Return key:

   ```
   $ @SYS$UPDATE:LIBDECOMP.COM
   ```

   The following information is displayed:

```
                OpenVMS Library Decompression Utility

 1  HELPLIB.HLB          14  NCPHELP.HLB          27  PHONEHELP.HLB
 2  STARLET.OLB          15  SDA.HLB              28  LIB.MLB
 3  ACLEDT.HLB           16  SHWCLHELP.HLB        29  STARLET.MLB
 4  ANLRMSHLP.HLB        17  SYSGEN.HLB           30  STARLETSD.TLB
 5  DBG$HELP.HLB         18  ANALAUDIT$HELP.HLB   31  SYS$STARLET_C.TLB
 6  DBG$UIHELP.HLB       19  SYSMANHELP.HLB       32  ERFLIB.TLB
 7  DISKQUOTA.HLB        20  TFF$TFUHELP.HLB      33  SYS$LIB_C.TLB
 8  EDFHLP.HLB           21  EXCHNGHLP.HLB        34  VAXCCURSE.OLB
 9  INSTALHLP.HLB        22  TPUHELP.HLB          35  VAXCRTL.OLB
10  LATCP$HELP.HLB       23  EVE$HELP.HLB         36  VAXCRTLD.OLB
11  MAILHELP.HLB         24  EVE$KEYHELP.HLB      37  VAXCRTLT.OLB
12  MNRHELP.HLB          25  UAFHELP.HLB          38  IMAGELIB.OLB
13  EDTHELP.HLB          26  TECO.HLB

    39  VMS$VOLATILE_PRIVATE_INTERFACES.OLB

     A  ALL libraries to be decompressed
     E  EXIT this procedure
```

```
* Enter letter or number(s) of libraries to be decompressed
  (Separate multiple entries with a comma):
```

2. Enter the appropriate letter or the numbers of the libraries you want to decompress. To decompress all libraries, the process takes approximately one-half hour.

8.7.4 Using LIBDECOMP.COM Interactively

You can execute LIBDECOMP.COM interactively to decompress up to eight libraries at a time by listing the names of the libraries you want to decompress as parameters on the command line.

Be sure to separate the library names with commas and do not include the file extensions. For example, to decompress VAXCRTL.OLB, DISKQUOTA.HLB, and LIB.MLB interactively, enter the following command:

```
$ @SYS$UPDATE:LIBDECOMP VAXCRTL, DISKQUOTA, LIB
```

8.7.5 Using LIBDECOMP.COM in Batch

You can also execute LIBDECOMP.COM in batch mode to decompress up to eight libraries at a time by listing the names of the libraries you want to decompress as parameters on a command line that includes the SUBMIT command.

Be sure to separate the library names with commas and do not include the file extension. For example, to decompress VAXCRTL.OLB, DISKQUOTA.HLB, and LIB.MLB as a batch job, enter the following command:

```
$ SUBMIT/NOTIFY/PARAMETERS=(VAXCRTL, DISKQUOTA, LIB)-
_$ SYS$UPDATE:LIBDECOMP
```

Note

When you type the command for a batch job, be sure you enclose the list of library names within parentheses.

8.8 Adding and Removing Operating System Files

If you decide after the upgrade to change which OpenVMS Alpha operating system files you want installed on your system, you can use the menu system contained on the OpenVMS Alpha operating system CD–ROM to add or remove files.

Note that you can obtain information about individual system files by entering HELP SYSTEM_FILES at the dollar sign prompt ($).

The procedure is as follows:

1. Mount and boot the OpenVMS Alpha operating system CD–ROM.
2. Choose option 1 from the menu.
3. Choose the PRESERVE option.
4. Enter the name of the device that contains the system disk and answer the questions.

5. After you answer the question ‘‘Do you want detailed descriptions?,’’ information regarding reconfiguring or reinstalling is displayed. Read the instructions, then choose the desired entry from the menu of reconfigure /reinstall options.

The following is a sample reconfigure operation:

```
    Please choose one of the following:

        1)  Install or upgrade OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 1
    ********************************************************

.
.
.

Do you want to INITIALIZE or to PRESERVE? [PRESERVE]

.
.
.
   Version V7.2 of the OpenVMS operating system is already installed
        on the target disk.  You may choose one of the following actions:

          o Reconfigure the OpenVMS platform.

            This action will allow you to change your selections of which
            of the windowing and network products you included with your
            OpenVMS operating system installation.

          o Reconfigure the OpenVMS operating system.

            This action will allow you to change your choices about which
            options you included for the OpenVMS operating system.

          o Reinstall the OpenVMS operating system.

            This action will cause ALL operating system  files to be replaced.
            You can also change your choices about which options you included
            for the OpenVMS operating system.

            Reinstall will take longer than Reconfigure.  Reinstall may be
            appropriate if you suspect that files in the operating system,
            or in the windowing and network products have become corrupted.

        If you want to reinstall any of the windowing and network products,
        choose "Install or upgrade layered products and patches" (option 3)
        from the main menu.

        If you want to change your choices about which options you included
        for any of the windowing and network products, choose "Reconfigure
        installed products" (option 5) from the main menu.

        Please choose one of the following:

            1)  Reconfigure the OpenVMS platform.
            2)  Reconfigure the OpenVMS operating system.
            3)  Reinstall the OpenVMS operating system.
            4)  Return to the Main Menu (abort the upgrade/installation).


    Enter choice or ? for help: (1/2/3/4/?) 2
    The following product has been selected:
        DEC AXPVMS VMS V7.2              Operating System


    Configuration phase starting ...
```

```
    You will be asked to choose options, if any, for each selected product and
    for
    any products that may be installed to satisfy software dependency
    requirements.

    DEC AXPVMS VMS V7.2: OpenVMS Operating System

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        Compaq Computer Corporation

    Do you want the defaults for all options? [YES]
```

Answer NO to this question, and select the options you want as described in Section 3.5.2. A list of components is provided in Section 3.5.3. After you respond to the prompts, the display continues and the installation procedure completes as described in Section 3.5.4. The following is a continuation of the sample display:

```
    Do you want to review the options? [NO]

Execution phase starting ...

The following product will be reconfigured:
    DEC AXPVMS VMS V7.2
Portion done: 0%...10%...20%...30%...40%...50%...60%...80%...90%...100%

The following product has been reconfigured:
    DEC AXPVMS VMS V7.2
.
.
.
```

For detailed instructions on how to remove the OpenVMS Alpha operating system from your disk, see Appendix E.

8.9 Preparing to Use OpenVMS Management Station

If you installed the OpenVMS Management Station software on your system (either by accepting all default values or by selecting the component manually during the upgrade procedure), you must perform several tasks on your OpenVMS Alpha system and your PC before you can use OpenVMS Management Station. These tasks include the following:

- Editing system files
- Starting OpenVMS Management Station on other nodes
- Verifying that you have the proper memory, disk space, media, and the required software to install and run OpenVMS Management Station on your PC
- Installing the client software on your PC

For complete information about preparing your OpenVMS system and your PC to run the OpenVMS Management Station server and client software, see Appendix D.

Note

After you complete the tasks described in Appendix D, you can then remove those files from your system to save disk space. *Do not* use the DELETE command to remove the files. Instead, reconfigure the OpenVMS Alpha operating system as described in Section 4.8.

8.10 Installing Layered Products

Except in certain instances, you should not have to reinstall layered products that you had on your system prior to the upgrade. However, if you need to install layered products, you can use the menu system included on the operating system CD–ROM to install certain layered products with the POLYCENTER Software Installation utility. If you did not install those layered products previously during the installation procedure, you can do so using the following procedure. To install layered products that require VMSINSTAL, see Section 8.10.1.

Note

To use this procedure, the target system must have the exact same version of the OpenVMS Alpha operating system as the CD–ROM. If you need to install layered products on a target system that has a *different* version of the operating system, use the alternate procedure described in the next section.

1. Shut down the system (described in Appendix A).
2. Boot the operating system CD–ROM (locally or from the InfoServer).
3. Choose option 2 from the menu to view which layered products can be installed using the POLYCENTER Software Installation utility.
4. Choose option 3 from the menu to install the layered products.
5. Shut down the system by selecting option 8 from the menu.
6. Boot from the system disk.

If the layered product that you want to install is not listed in the display, see the documentation you received with that layered product for installation information.

For additional information about installing layered products, see the *OpenVMS System Manager's Manual*.

Be sure you back up the system disk after you install all your layered products.

8.10.1 Alternate Procedure

The following is another method for installing layered products from the OpenVMS Alpha operating system CD–ROM:

1. From your running OpenVMS system (the target system disk), mount the OpenVMS Alpha operating system CD–ROM.
2. Locate the directories and files containing the available layered products by entering the following command (where, in the example, DKA400: is the device name of the CD–ROM):

   ```
   $ DIRECTORY /NOHEAD/NOTRAIL DKA400:[*.KIT]
   ```

   You can use the PRODUCT FIND command to locate kits that are installed using the POLYCENTER Software Installation utility. For example:

   ```
   $ PRODUCT FIND * /SOURCE=DKA400:[*.KIT]
   ```

3. To install layered products that require VMSINSTAL (indicated in the directories by save-set file names with file types of .A, .B, and so on), enter the @SYS$UPDATE:VMSINSTAL command and then specify the CD–ROM device and directory. For example:

```
$ @SYS$UPDATE:VMSINSTAL
* Where will the distribution volumes be mounted: DKB400:[LP.KIT]
```

4. To install layered products that require the POLYCENTER Software Installation utility (indicated in the directories by file names with file types of .PCSI or .PCSI$DESCRIPTION), use the PRODUCT INSTALL command to specify the CD–ROM device name and directory. The following is an example of the PRODUCT INSTALL command:

```
$ PRODUCT INSTALL name /SOURCE=DKB400:[name.KIT]
```

8.10.2 DECevent

When you install OpenVMS Alpha Version 7.2, the DIAGNOSE command is disabled. To enable the DIAGNOSE command, you must install the DECevent kit provided on the OpenVMS Alpha Version 7.2 CD–ROM following the upgrade to OpenVMS Alpha Version 7.2. The DECevent kit is located in the directory [DECEVENT_0252.KIT] on the CD–ROM.

If the DECevent kit provided on the OpenVMS Alpha CD–ROM is not installed after the operating system, users attempting to use the DIAGNOSE command will receive the following system message:

```
$ DIAGNOSE [params]
%DIA-E-NOINSTAL, DIAGNOSE has not been installed on this system
```

8.10.3 Monitoring Performance History

The OpenVMS Alpha Version 7.2 operating system CD–ROM also includes a Monitoring Performance History (MPH) kit located in the [MPH] directory. See the *OpenVMS Version 7.2 Release Notes* for more information about installing and using this optional software.

8.11 Installing DIGITAL OpenVMS Debugger Clients on a PC

The DIGITAL OpenVMS Debugger Version 7.2 includes a client/server interface. The debug server runs on the OpenVMS operating system; there are debug clients that run on OpenVMS, Microsoft Windows 95, and Microsoft Windows NT. There is no separate installation procedure for the components that run on the OpenVMS operating system. They are installed when you install the operating system. This section describes the procedure for installing debug clients on a PC.

The following table shows which client kit to use for each PC configuration:

CPU	Operating System	Client Kit
Intel	Microsoft Windows 95	[DEBUG_CLIENTS010.KIT]DEBUGX86010.EXE
Intel	Microsoft Windows NT	[DEBUG_CLIENTS010.KIT]DEBUGX86010.EXE
Alpha	Microsoft Windows NT	[DEBUG_CLIENTS010.KIT]DEBUGALPHA010.EXE

The client kits are self-extracting .EXE files. To make these clients available to PC users, copy these files from the distribution media to a suitable PATHWORKS share, FTP server, or other device available to the PC.

Once the appropriate executable file has been transferred to the PC, you can run the file to install the debug client on the PC. The InstallShield installation procedure guides you through the installation.

By default, the debug client is installed in the \Programs\OpenVMS Debugger directory. You can also click on the Browse button to select an alternate directory.

You can choose one of the following installation options:

Install Option	Details
Typical	Debug Client and the *OpenVMS Debugger Manual* in HTML format
Compact	Debug Client only
Custom	Choice of Debug Client and/or the *OpenVMS Debugger Manual* in HTML format

The Typical installation option creates an OpenVMS Debugger program folder that contains shortcuts to the following items:

- Debug client
- Debug client Help file
- The *OpenVMS Debugger Manual* in HTML format
- A Readme file
- An Uninstall procedure

For information about using the OpenVMS Debugger, see the *OpenVMS Debugger Manual*.

8.12 Backing Up the Customized System Disk

After you have upgraded and customized the OpenVMS Alpha operating system to your satisfaction and installed layered products, protect your work by making a backup copy of the system disk.

To back up the system disk:

1. Shut down the system (described in Appendix A).
2. Boot the operating system CD–ROM (locally or from the InfoServer).
3. Use the menu system to enter the DCL environment (option 7).
4. Mount the system disk and the target device on which you will make the backup copy.
5. Enter backup commands to back up the system disk to the target device.
6. Log out from the DCL environment.
7. Shut down the system by selecting option 8 from the menu.
8. Boot from the system disk.

For complete information about backup operations, including a description of an alternate method that does not require booting from the operating system CD–ROM and that allows you to back up a shadowed disk without disabling the shadow set, see Appendix B.

8.13 Rebooting Cluster Members

If you are performing a rolling upgrade in an OpenVMS Cluster environment and have completed all the postupgrade tasks required for your upgraded system disk, reboot each system that boots from that system disk.

For more information about booting your system, see Appendix A.

8.14 Running AUTOGEN

Although AUTOGEN runs automatically at the end of the upgrade procedure, Compaq recommends that you run AUTOGEN periodically after you perform an upgrade.

After 24 hours of operation, run AUTOGEN in FEEDBACK mode and reboot the system. Run AUTOGEN in this way again two workdays later.

AUTOGEN sets the values of system parameters and the sizes of the page and swap files according to the system's work load. Compaq recommends that you run AUTOGEN from SAVPARAMS through TESTFILES on a weekly basis and examine AGEN$PARAMS.REPORT to determine the need for additional changes.

Hardcoded values in MODPARAMS.DAT should not hinder AUTOGEN's ability to calculate feedback parameters. AUTOGEN generally does not reduce the value of parameters that allocate resources; it considers current parameter values to be minimum values, which means you do not have to add MIN_* symbols to MODPARAMS.DAT. AUTOGEN does increase parameter values according to its calculations unless you have specified explicit or maximum values (by adding MAX_* symbols) in MODPARAMS.DAT.

For more information about the MODPARAMS.DAT file and about using AUTOGEN in general, see the *OpenVMS System Manager's Manual*.

8.15 Postupgrade Checklist

Use the following checklist to make sure you have performed all the necessary tasks:

- ☐ In a volume shadowing environment, reform the shadow set.
- ☐ Register new licenses.
- ☐ Examine AUTOGEN output stored in the file AGEN$PARAMS.REPORT.
- ☐ Examine MODPARAMS.DAT.
- ☐ Examine the command procedure templates supplied with the OpenVMS Alpha Version 7.2 operating system.
- ☐ Decompress the system libraries using LIBDECOMP.COM.
- ☐ Run the User Environment Test Package (UETP) to test the system (described in the *OpenVMS System Manager's Manual*).
- ☐ Add and remove files.
- ☐ Prepare your OpenVMS Alpha system and your PC to run OpenVMS Management Station by following the procedures described in Appendix D.
- ☐ Install layered products, including DECwindows (if necessary).
- ☐ Back up the customized system disk.

After Upgrading the OpenVMS Alpha Operating System 8.15 Postupgrade Checklist

- ☐ Reboot each system that boots from the upgraded system disk (for a rolling upgrade in an OpenVMS Cluster environment).
- ☐ Run AUTOGEN.

A

Halt, Boot, and Shutdown Procedures

This appendix contains the following information:

- Booting operations, including the following:
  - Booting the operating system CD–ROM, locally and from an InfoServer system
  - Booting manually from the system disk
  - Performing a conversational boot
  - Booting with minimum startup
  - Booting with the XDelta utility (XDELTA)
  - Booting from a different directory
  - Booting with a PMAZB or PMAZC TURBOchannel adapter
  - Booting over the network with an alternate TURBOchannel adapter
  - Booting in an emergency
- Set, Show, and Writeboot operations, including the following:
  - Setting the system for automatic booting
  - Setting and showing boot devices
  - Setting boot parameters
  - Using the Writeboot utility
- Halt and shutdown operations
- Troubleshooting procedures

A.1 Booting Operations

The following sections describe different methods of booting your system.

A.1.1 Booting the Operating System CD–ROM

If you need to boot the OpenVMS Alpha operating system CD–ROM, either to perform an installation or upgrade or to perform related operations such as mounting or backing up the system disk, follow the steps in the following sections, depending on whether you are booting locally or from the InfoServer.

Halt, Boot, and Shutdown Procedures
A.1 Booting Operations

A.1.1.1 Booting from the Local Drive

Boot from the local drive as follows:

1. Insert the operating system CD–ROM into the local CD–ROM drive.
2. At the console prompt (>>>), enter the SHOW DEVICE command so you can identify the name of the CD–ROM drive (for example, DKA400:)
3. Enter the boot command in the following format:

   BOOT -FLAGS 0,0 *source-drive*

   Substitute the device name of the CD–ROM drive (as listed in the SHOW DEVICE display) for *source-drive*.

   For example, if the SHOW DEVICE display lists the device name of your CD–ROM drive as DKA400, enter the following command and press the Return key:

   ```
   >>> BOOT -FLAGS 0,0 DKA400
   ```

After you boot, the system displays a menu from which you can choose options to perform the following tasks:

- Install or upgrade the operating system using the POLYCENTER Software Installation utility.
- Enter a DCL environment from which you can perform preinstallation or maintenance tasks such as mounting or showing devices and backing up or restoring files on the system disk.
- Shut down the system.

A.1.1.2 Booting from the InfoServer

To boot the operating system CD–ROM using the InfoServer, do the following:

1. At the console prompt, enter the following command:

   ```
   >>> B -FLAGS 0,0 -FILE APB_072 lan-device-name
   ```

   Note the following conventions:

   - *APB_072* is the file name of the APB program used for the initial system load (ISL) boot program.
   - *lan-device-name* is the name of the local area network (LAN) device identified with your computer. For information about the LAN devices your system supports, refer to the following table. For additional information, see the hardware manuals that you received with your Alpha computer and the *OpenVMS Software Product Description*.

Alpha Computer	Ethernet Device	FDDI Device
ALPHAbook 1	EOA0	–
AlphaServer 400 series	EWA0	FWA0
AlphaServer 1000 series	ERA0, EWA0	FRA0
AlphaServer 1000A series	EWA0	FWA0
AlphaServer 1200 series	EWA0	FWA0
AlphaServer 2000 series	ERA0, EWA0	FRA0
AlphaServer 2100, 2100A series	ERA0, EWA0	FRA0
AlphaServer 4100 series	EWA0	FWA0
AlphaServer 8200 series	EXA0, EWA0	FXA0
AlphaServer 8400 series	EXA0, EWA0	FXA0
AlphaStation 200 series	EWA0	FWA0
AlphaStation 400 series	EWA0	FWA0
AlphaStation 500 series	EWA0	FWA0
AlphaStation 600 series	ERA0, EWA0	FWA0
DEC 2000 series	ERA0	–
DEC 3000 series	ESA0	"n/ESA0"
DEC 4000 series	EZA0	–
DEC 7000 series	EXA0	FXA0
DEC 10000 series	EXA0	FXA0
Digital Personal Workstation (DPWS) series	EWA0	FWA0

Note

If you are using a DEC 3000 or 4000 series system, note the following:

- On DEC 3000 series systems, you can boot through the InfoServer with an Ethernet PMAD device or FDDI DEFTA device by specifying the device name as ‘‘*n*/ESA0’’. The value for *n* is the TURBOchannel slot number, which you can obtain by entering the SHOW CONFIGURATION command at the console prompt (>>>) and examining the display. For more information, see Section A.1.8 in Appendix A.
- On DEC 4000 series, you *must* specify the ISL file name in uppercase (APB_072).

2. The InfoServer ISL program then displays the following menu:

```
Network Initial System Load Function
Version 1.2

  FUNCTION         FUNCTION
    ID
    1      -       Display Menu
    2      -       Help
    3      -       Choose Service
    4      -       Select Options
    5      -       Stop
```

```
Enter a function ID value:
```

3. Respond to the prompts as follows, pressing the Return key after each entry:

   a. Enter 3 for the function ID.

   b. Enter 2 for the option ID.

   c. Enter the service name (ALPHA072).

   A sample display follows:

```
Enter a function ID value: 3 Return

 OPTION          OPTION
   ID
   1     -       Find Services
   2     -       Enter known Service Name

Enter an Option ID value: 2 Return
Enter a Known Service Name: ALPHA072 Return
```

After you boot, the system displays a menu from which you can choose options to perform the following tasks:

- Install or upgrade the operating system using the POLYCENTER Software Installation utility.
- Enter a DCL environment from which you can perform preinstallation or maintenance tasks such as mounting or showing devices and backing up or restoring files on the system disk.
- Shut down the system.

A.1.2 Booting Manually from the System Disk

Boot the system disk manually as follows:

IF ...	THEN ...
the OpenVMS Alpha operating system is running,	go to step 1.
the OpenVMS Alpha operating system is *not* running,	go to step 4.

1. Log in to the SYSTEM account.
2. Enter the following command and press the Return key:

```
$ @SYS$SYSTEM:SHUTDOWN
```

3. Answer the questions displayed by the system. When the procedure asks if an automatic reboot should be performed, press the Return key for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE
```

4. Halt the system by entering Ctrl/P or by pressing the Halt button. (See Section A.3.1 for more information about how to halt your Alpha computer.)
5. Enter the BOOT command in the following format:

   BOOT *device-name*

   Substitute the device name of the system disk for *device-name*. For example, to boot from a drive with a device name of DKA400, enter the following command and press the Return key:

```
>>> BOOT DKA400
```

To boot from the network, enter the following command and press the Return key:

```
>>> BOOT ESA0
```

A.1.3 Performing a Conversational Boot

A conversational boot is most commonly used in research and development environments and during software upgrades. Perform a conversational boot to stop the boot process before it completes. The boot process stops after it loads SYS$SYSTEM:SYSBOOT.EXE and displays the SYSBOOT> prompt. At the SYSBOOT> prompt, you can enter specific OpenVMS System Generation utility (SYSGEN) commands to do the following:

- Examine system parameter values
- Change system parameter values
- Specify another parameter file
- Specify another system startup command procedure
- Select the default system parameter file if you modified system parameters to values that render the system unbootable
- Specify a minimum startup

There are several ways to perform a conversational boot. The following procedure is the most direct:

IF ...	THEN ...
the OpenVMS Alpha operating system is running,	go to step 1.
the OpenVMS Alpha operating system is *not* running,	go to step 4.

1. Log in to the SYSTEM account.
2. Enter the following command and press the Return key:

   ```
   $ @SYS$SYSTEM:SHUTDOWN
   ```

3. Answer the questions displayed by the system. When the procedure asks if an automatic reboot should be performed, press the Return key for NO. When the procedure is finished, it displays the following message:

   ```
   SYSTEM SHUTDOWN COMPLETE
   ```

4. Halt the system by entering Ctrl/P or by pressing the Halt button. (See Section A.3.1 for more information about how to halt your Alpha computer.)
5. To begin the conversational boot, enter the BOOT command in the following format:

   BOOT -FLAGS 0,1 [*device-name*]

   Substitute the device name of the drive from which you want to boot for *device-name*. For example, if the system disk has a device name of DKA400, enter the following command and press the Return key:

   ```
   >>> BOOT -FLAGS 0,1 DKA400
   ```

   If you do not specify a device name, the system boots from the boot device assigned when you entered the SET BOOTDEF_DEV command.

6. At the SYSBOOT> prompt, you can enter any of the SYSGEN commands listed in Table A–1. For more information about these SYSGEN commands, see the *OpenVMS System Management Utilities Reference Manual*.
7. When you finish using the SYSGEN commands, enter the CONTINUE command to complete the boot process.

Table A–1 SYSGEN Commands Used in the SYSBOOT Procedure

Command	Description
CONTINUE	Resumes the boot procedure.
DISABLE CHECKS	Inhibits checking of parameter values specified with the SET command.
ENABLE CHECKS	Permits checking of parameter values specified with the SET command.
HELP	Displays a summary of the SYSBOOT commands on the terminal screen.
SET *parameter-name*	Establishes the value of a system parameter.
SET/STARTUP	Sets the name of the system startup command procedure.
SHOW *[parameter]*	Displays active, current, default, maximum, and minimum values for specific parameters. (Use qualifiers to display characteristics of parameters grouped by categories.)
USE *[file-spec]*	Specifies a parameter file to be used as a source of values. You must enter the entire file specification, including device and directory; you cannot specify a logical name.

For examples of using conversational booting, see Section A.1.4 and Section A.1.9.

A.1.4 Booting with Minimum Startup

In certain cases, you might want to boot your system without performing the full sequence of startup events. For example, if a startup event prevents you from logging in, you might want to boot the system without executing the startup so that you can log in and fix the problem. You can use the conversational boot to specify a minimum startup.

Note

Because this procedure bypasses specific startup operations, it does not autoconfigure the system's peripheral devices.

Boot the system with minimum startup as follows:

1. Perform a conversational boot by entering the following command at the console prompt:

```
>>> BOOT -FLAGS 0,1 [device-name]
```

2. Enter the following command and press the Return key:

```
SYSBOOT> SET STARTUP_P1 "MIN"
```

3. Enter the following command to continue booting:

```
SYSBOOT> CONTINUE
```

4. After the system boots, log in and enter the following commands to invoke SYSMAN and clear the STARTUP_P1 parameter you set in step 2:

```
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> PARAMETERS USE CURRENT
SYSMAN> PARAMETERS SET STARTUP_P1 ""
SYSMAN> PARAMETERS WRITE CURRENT
```

A.1.5 Booting with the XDelta Utility (XDELTA)

The XDelta utility (XDELTA) is a debugging tool that system programmers use. The procedure for booting all Alpha computers with XDELTA is the same.

The following table describes the valid values you can specify when booting with XDELTA:

Value	System Response
0	Normal, nonstop boot (default).
1	Begins a conversational boot and then displays the SYSBOOT prompt.
2	Includes XDELTA but does not take the initial breakpoint.
3	Displays the SYSBOOT prompt and includes XDELTA but does not take the initial breakpoint.
6	Includes XDELTA and takes the initial breakpoint.
7	Includes XDELTA, displays the SYSBOOT prompt, and takes the initial breakpoint at system initialization.

The following is an example of booting with XDELTA from the console prompt:

```
>>> BOOT -FLAGS 0,7
```

For more information about using XDELTA, see the *OpenVMS Delta/XDelta Debugger Manual*.

A.1.6 Booting from a Different Directory

By default, the OpenVMS Alpha operating system is installed in the system root directory [SYS0]. However, if you have created a cluster system disk, you can use the SYS$MANAGER:CLUSTER_CONFIG.COM procedure to add a copy of the operating system to a different root directory. (See the *OpenVMS System Manager's Manual* for more information about using the SYS$MANAGER:CLUSTER_CONFIG.COM procedure.)

To boot from a different directory (for example, [SYS3]), enter the BOOT command as follows:

```
>>> BOOT -FLAGS 3,0  DKA200
```

A.1.7 Booting with a PMAZB or PMAZC TURBOchannel Adapter

PMAZB and PMAZC TURBOchannel adapters are adapters that are software-compatible with the integrated SCSI ports on DEC 3000 Alpha series systems.

The DEC 3000 Alpha series system consoles implement the SHOW CONFIGURATION console command, which displays information about the TURBOchannel options and the built-in adapters in the system. When a PMAZB or PMAZC adapter is installed in the TURBOchannel, the SHOW CONFIGURATION command displays the ''PMAZB-AA'' or ''PMAZC-AA'' string, the TURBOchannel slot number, and the device status.

The DEC 3000 Alpha series consoles also implement the SHOW DEVICE command, which displays information about the devices in the system. Because the integrated SCSI adapter is built into every DEC 3000 Alpha series system, the SHOW DEVICE console command can display the SCSI devices connected to the integrated SCSI ports. However, the SHOW DEVICE console command cannot display the SCSI devices connected to the PMAZB or PMAZC SCSI ports.

To make the console display the devices connected to the PMAZB or PMAZC SCSI ports, enter the following command at the console prompt, where *x* is the TURBOchannel slot number in which the PMAZB or PMAZC adapter is installed:

```
>>> TEST TCx CNFG
```

This command displays the devices that are connected to each SCSI port of the PMAZB or PMAZC adapter. The device controller letters are either A or B, based upon the PMAZB or PMAZC ports to which the devices are connected. Do not confuse these devices with any DKA*xxx* or DKB*xxx* devices displayed by the SHOW DEVICE command, which shows SCSI devices on the integrated SCSI ports only.

To boot from a device connected to a PMAZB or PMAZC adapter, enter the boot command as follows:

```
>>> BOOT "X/DKYzzz"
```

The following conventions are used:

- *X* is the TURBOchannel slot number in which the PMAZB or PMAZC adapter is installed.
- *DK* is the device code of the boot device.
- *Y* is either A or B, depending on the SCSI port of the PMAZB or PMAZC adapter that contains the boot device.
- *zzz* is the SCSI unit number of the boot device.

The OpenVMS Alpha operating system does not distinguish between the PMAZB or PMAZC adapter and the integrated SCSI adapter. The operating system views them as identical adapters. Because the operating system searches for I/O adapters in backplane slot number order, device controller letters are assigned that correspond to the backplane order of the TURBOchannel options, followed by the integrated adapters. This is different from console SCSI device naming, which always designates SCSI devices on the integrated SCSI ports as either "A" or "B" port devices.

Example

On a DEC 3000 Model 500 Alpha system with no TURBOchannel options installed, the OpenVMS Alpha operating system names the integrated SCSI ports PKA0 and PKB0, and the devices connected to the ports inherit the controller letter from the port controller letter (A or B). However, if a PMAZB or PMAZC adapter is installed in the TURBOchannel, the operating system names the PMAZB or PMAZC SCSI ports PKA0 and PKB0 and names the integrated SCSI ports PKC0 and PKD0. The devices connected to the ports inherit the controller letter from the port controller letter (A, B, C, or D).

A.1.8 Booting Over the Network with an Alternate TURBOchannel Adapter

You can use an alternate TURBOchannel adapter to boot a DEC 3000 series Alpha computer (with the TURBOchannel option) over the network in an InfoServer or OpenVMS Cluster environment. Examples of alternate TURBOchannel adapters are the PMAD (which connects to the Ethernet) and the DEFTA (which connects to the FDDI).

To boot from a TURBOchannel device connected to one of these alternate adapters, enter the boot command as follows:

```
>>> BOOT "n/ESA0"
```

The value for *n* is the TURBOchannel slot number for the device, which you can obtain by entering the SHOW CONFIGURATION command at the console prompt (>>>) and examining the display. In the following example, the TURBOchannel slot number (listed under the ''TCINFO'' column) is 0:

```
>>> SHOW CONFIG

DEC 3000 - M300
Digital Equipment Corporation
     VPP PAL X5.56-80800101/OSF PAL X1.34-80800201 - Built on 18-DEC-1996 11:376

               TCINFO      DEVNAM        DEVSTAT
               ------      --------      --------
                 CPU       OK KN16-AA -V3.2-S6CD-I151-sV2.0-DECchip 21064 P3.0-150
                ASIC       OK
                 MEM       OK
                 MEM       OK
6
                 CXT       OK
5
                 NVR       OK
                 SCC       OK
                  NI       OK
                ISDN       OK
4
                SCSI       OK
0-PMAD-AA       TC0
```

A.1.9 Booting in an Emergency

If a system problem prevents your system from booting, you might need to perform an emergency boot operation. Table A–2 summarizes these emergency boot operations, and the sections that follow describe each boot operation in more detail.

Table A–2 Emergency Boot Procedures

Operation	When to Use
Booting with default system parameters	When parameter values in the parameter file have been modified so that the system is unbootable
Booting without startup and login procedures	If an error in the startup or login procedures prevents you from logging in
Booting without the user authorization file	If you have forgotten the password and cannot log in to a privileged account

A.1.9.1 Booting with Default System Parameters

If the current values stored in the parameter file have been incorrectly modified, these incorrect values might cause the system to become unbootable. With a conversational boot operation, you can reset the active values for all system parameters to the default value. (In most cases, Compaq recommends that you use AUTOGEN to modify system parameters. In certain cases, however, you can use a conversational boot to modify a parameter value *temporarily*. To change a parameter value *permanently*, you must edit MODPARAMS.DAT and run AUTOGEN. For instructions, see the *OpenVMS System Manager's Manual*.) The default values allow you to boot the system temporarily so you can correct the problem.

How to Perform This Task

1. Perform a conversational boot by entering the following command at the console prompt:

   ```
   >>> BOOT -FLAGS 0,1 [device-name]
   ```

2. At the SYSBOOT> prompt, enter the following command:

   ```
   SYSBOOT> USE DEFAULT
   ```

   This command specifies that default values should be used for all parameters.

3. Enter the following command to continue booting:

   ```
   SYSBOOT> CONTINUE
   ```

4. When the system finishes booting, determine which changed parameter caused the problem and reset the parameter value. If you specified the value for the parameter in the AUTOGEN parameter file MODPARAMS.DAT, fix the value in that file and run AUTOGEN. For more information, see the *OpenVMS System Manager's Manual*.

5. Shut down and reboot the system.

Example

```
SYSBOOT> USE DEFAULT
SYSBOOT> CONTINUE
Username: SYSTEM
Password:
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> PARAMETERS USE CURRENT
SYSMAN> PARAMETERS SET NPAGEDYN 2999808
SYSMAN> PARAMETERS WRITE CURRENT
SYSMAN> EXIT
$ EDIT SYS$SYSTEM:MODPARAMS.DAT
   .
   .
   .
[Insert the following line in MODPARAMS.DAT:]
MIN_NPAGEDYN = 2999808
   .
   .
   .
$ @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

A.1.9.2 Booting Without Startup and Login Procedures

If the system does not complete the startup procedures or does not allow you to log in, bypass the startup and login procedures. The startup and login procedures provided by Compaq should always work. However, if you introduce an error when modifying the startup or login procedures, it is possible to accidentally lock yourself out of the system.

How to Perform This Task

1. Perform a conversational boot by entering the following command at the console prompt:

   ```
   >>> BOOT -FLAGS 0,1 [device-name]
   ```

2. Enter the following command at the SYSBOOT> prompt:

   ```
   SYSBOOT> SET/STARTUP OPA0:
   ```

3. Enter the following command to continue booting:

   ```
   SYSBOOT> CONTINUE
   ```

4. When the system is booted, the operator console displays the DCL command prompt ($). You are logged in.

5. Enter the following DCL command:

   ```
   $ SET NOON
   ```

   This command directs the operating system to ignore any errors that might occur. If you do not enter this command and you invoke an error, the system will log you out.

6. Correct the error condition that caused the login failure. (That is, make the necessary repairs to the startup or login procedures, or to the SYSUAF.DAT file.)

   Invoke a text editor to correct the startup or login file. Note that some system consoles might not supply a screen-mode editor. You can also copy a corrected file and delete the incorrect version by using the RENAME and DELETE commands.

7. Invoke SYSMAN and enter the following commands to reset the startup procedure:

   ```
   $ RUN SYS$SYSTEM:SYSMAN
   SYSMAN> PARAMETERS USE CURRENT
   SYSMAN> PARAMETERS SET/STARTUP SYS$SYSTEM:STARTUP.COM
   SYSMAN> PARAMETERS WRITE CURRENT
   SYSMAN> EXIT
   $
   ```

8. Perform a normal startup by entering the following command:

   ```
   $ @SYS$SYSTEM:STARTUP
   ```

Example

```
SYSBOOT> SET/STARTUP OPA0:
SYSBOOT> CONTINUE
$ SET NOON
$ SET DEFAULT SYS$SYSROOT:[SYSEXE]
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> PARAMETERS USE CURRENT
SYSMAN> PARAMETERS SET/STARTUP SYS$SYSTEM:STARTUP.COM
SYSMAN> PARAMETERS WRITE CURRENT
SYSMAN> EXIT
$ @SYS$SYSTEM:STARTUP
```

A.1.9.3 Booting Without the User Authorization File

Ordinarily, the startup and login procedures provided by Compaq always work; however, certain user interventions can cause them to fail. A very simple way to lock yourself out of the system is to set passwords to login accounts and forget them. In such an emergency, you can use the alternate user authorization file rather than the standard user authorization file.

Note

You can use this method only to log in to the system from the console terminal; you cannot use other terminal lines.

Setting the system parameter UAFALTERNATE defines the logical name SYSUAF to refer to the file SYS$SYSTEM:SYSUAFALT.DAT. If this file is found during a normal login, the system uses it to validate the account and prompts you for the user name and password.

If it cannot find this file, the system assumes that the UAF is corrupt and accepts any user name and any two passwords to log you in to the system from the system console. Logins are prohibited from all other terminal lines.

When you perform this procedure, the system assigns the following values to your user account:

Field	Value
Name	User name
UIC	[001,004]
Command interpreter	DCL
Login flags	None
Priority	Value of the system parameter, DEFPRI
Resources	Values of the PQL system parameters
Privileges	All

The process name is usually the name of the device on which you logged in (for example, _OPA0:).

How to Perform This Task

1. Perform a conversational boot by entering the following command at the console prompt:

   ```
   >>> BOOT -FLAGS 0,1 [device-name]
   ```

2. At the SYSBOOT> prompt, enter the following command:

   ```
   SYSBOOT> SET UAFALTERNATE 1
   ```

3. If your system is running DECwindows software, you must also disable the windowing system by entering the following command:

   ```
   SYSBOOT> SET WINDOW_SYSTEM 0
   ```

4. Enter the CONTINUE command to continue booting:

   ```
   SYSBOOT> CONTINUE
   ```

5. When the startup procedure completes, log in on the console terminal by entering any user name and any two passwords in response to the *Username:* and *Password:* prompts.
6. Enter the following command to use the default UAF:

```
$ DEFINE/SYSTEM/EXECUTIVE_MODE SYSUAF SYS$SYSTEM:SYSUAF.DAT
```

7. Use the Authorize utility to fix the problem that caused you to be locked out of the system (for example, a forgotten password). Enter HELP MODIFY at the UAF> prompt for information about modifying passwords. For more details, see the *OpenVMS System Management Utilities Reference Manual*.
8. Enter the following commands to invoke SYSMAN and clear the UAFALTERNATE system parameter you set in step 2:

```
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> PARAMETERS USE CURRENT
SYSMAN> PARAMETERS SET UAFALTERNATE 0
```

   In most cases, Compaq recommends that you use AUTOGEN to modify system parameters. However, because this parameter is only being changed temporarily, you can use SYSMAN to change it back.
9. If you disabled the windowing system in step 3, reenable it by entering the following command:

```
SYSMAN> PARAMETERS SET WINDOW_SYSTEM 1
```

10. Enter the following command to save the changed system parameter values:

```
SYSMAN> PARAMETERS WRITE CURRENT
```

11. Shut down and reboot the system.

Example

```
SYSBOOT> SET UAFALTERNATE 1
SYSBOOT> SET WINDOW_SYSTEM 0
SYSBOOT> CONTINUE
Username: Return
Password: Return
Password: Return
$ DEFINE/SYSTEM/EXECUTIVE_MODE SYSUAF SYS$SYSTEM:SYSUAF.DAT
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
AUTHORIZE> MODIFY SYSTEM/PASSWORD=FGLFTUTU
AUTHORIZE> EXIT
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> PARAMETERS USE CURRENT
SYSMAN> PARAMETERS SET WINDOW_SYSTEM 1
SYSMAN> PARAMETERS SET UAFALTERNATE 0
SYSMAN> PARAMETERS WRITE CURRENT
SYSMAN> EXIT
$ @SYS$SYSTEM:SHUTDOWN
```

A.2 Set, Show, and Writeboot Operations

The following sections describe how to perform SET, SHOW, and Writeboot operations.

A.2.1 Setting the System for Automatic Booting

Alpha computers can boot automatically from a designated boot device. When you installed the OpenVMS Alpha operating system, you designated the system disk as the default boot device. Section A.2.2 describes how to change the default boot device.

Alpha computers can boot automatically from the default boot device under the following conditions:

- When you first turn on system power
- When system power comes on after a power failure
- After you shut down the system (if you enter Y when the shutdown procedure asks if an automatic reboot should be performed)
- After a bugcheck
- If the system halts under program control

Set the system to boot automatically by performing the following steps:

IF ...	THEN ...
the OpenVMS Alpha operating system is running,	go to step 1.
the OpenVMS Alpha operating system is *not* running,	go to step 4.

1. Log in to the SYSTEM account.
2. Enter the following command and press the Return key:

   ```
   $ @SYS$SYSTEM:SHUTDOWN
   ```

3. Answer the questions displayed by the system. When the procedure asks if an automatic reboot should be performed, press the Return key for NO. When the procedure is finished, it displays the following message:

   ```
   SYSTEM SHUTDOWN COMPLETE
   ```

4. Halt the system by entering Ctrl/P or by pressing the Halt button. (See Section A.3.1 for more information about how to halt your Alpha computer.)
5. If you have an SMP system with multiple CPUs, enter the following command at the console prompt (>>>) to stop the other CPUs:

   ```
   >>> INITIALIZE
   ```

6. Enter the following command to show whether the system has been set to boot automatically:

   ```
   >>> SHOW AUTO_ACTION
   ```

   The system displays one of the following:

   - Restart
   - Boot
   - Halt

7. Enter the SET AUTO_ACTION command if you want to change the automatic booting behavior. For example, the following command sets the system to reboot automatically:

   ```
   >>> SET AUTO_ACTION RESTART
   ```

8. After you set this variable, Compaq recommends that you set the boot device and operating system flags as well, using the SET BOOTDEF_DEV and SET BOOT_OSFLAGS commands described in the following sections.

A.2.2 Setting and Showing Boot Devices

Use the SET BOOTDEF_DEV command to tell the system which drive you want to boot from (that drive becomes the default boot device). Use the SHOW BOOTDEF_DEV command to display the current default boot device.

Note that when you set this variable, Compaq recommends that you set the operating system boot parameters as well, using the SET BOOT_OSFLAGS command.

At the console prompt (>>>), enter the SET BOOTDEF_DEV command in the following format:

SET BOOTDEF_DEV *device-name*

Substitute the device name of the system disk for *device-name*. For example, to boot from a drive with a device name of DKA400 on a DEC 3000 Alpha series computer, enter the following command and press the Return key:

```
>>> SET BOOTDEF_DEV DKA400
```

The next time you boot the system, you can enter the BOOT command without specifying a device name (because DKA400 is now the default boot device). For example:

```
>>> BOOT
```

Note

If you have not used the SET BOOTDEF_DEV command to set the drive to boot from and you enter the BOOT command without specifying a device name, the system displays an error message.

Use the SHOW BOOTDEF_DEV command to find out what drive was specified in the last SET BOOT command. For example:

```
>>> SHOW BOOTDEF_DEV
```

To cancel the drive specified in a previous SET BOOTDEF_DEV command, enter the following command and press the Return key:

```
>>> SET BOOTDEF_DEV
```

Note

This command is not valid on DEC 3000 Alpha series systems.

A.2.3 Setting Boot Parameters

By default, when you boot the operating system, the flags parameter is set to 0. If you want to define parameters to enable specific functions during the booting process, use the SET BOOT_OSFLAGS console command.

The following is a list of values you can specify with the SET BOOT_OSFLAGS command:

Hexadecimal Value	System Response
1	Allows a conversational boot (the system displays the SYSBOOT> prompt).
2	Maps XDELTA to a running system.
4	Stops the boot procedure at the initial system breakpoint.
8	Performs a diagnostic bootstrap.
10	Stops the boot procedure at the bootstrap breakpoints.
20	Omits header from secondary bootstrap image.
80	Prompts for the name of the secondary bootstrap file.
100	Halts the system before the secondary bootstrap.
2000	Marks corrected read data error pages as bad.
10000	Displays extensive, detailed debug messages during the boot process.
20000	Displays selected user-oriented messages during the boot process.

The following examples show how to use the SET BOOT_OSFLAGS command:

- The following command specifies the root directory as 0 and the parameter as 1, which sets the system to perform a conversational boot from the [SYS0] directory when you enter the BOOT command:

  ```
  >>> SET BOOT_OSFLAGS 0,1
  ```

- The following command specifies the root directory as 1 and the parameter as 0, which sets the system (for example, the second host in a two-system DSSI OpenVMS Cluster configuration) to boot from the [SYS1] directory (instead of [SYS0]) when you enter the BOOT command:

  ```
  >>> SET BOOT_OSFLAGS 1,0
  ```

- The following example specifies the root directory as 0 and the parameters as 1, 2, 4, and 20000 (for a total hexadecimal value of 20007). As a result, when you enter the BOOT command, the system will perform a conversational boot from the [SYS0] directory with XDELTA, stop at the initial system breakpoint, and display relevant user messages.

  ```
  >>> SET BOOT_OSFLAGS 0,20007
  ```

To display the parameters you have just set, use the SHOW BOOT_OSFLAGS command. For example:

```
>>> SHOW BOOT_OSFLAGS
BOOT_OSFLAGS = 0,20007
```

A.2.4 Using the Writeboot Utility

The Writeboot utility (WRITEBOOT.EXE) is copied to your system disk during the installation procedure. It allows you to create a bootable OpenVMS Alpha system disk from one that was originally created by one of the following methods:

- A nonimage backup of an Alpha system disk (possibly corrupting the boot block)
- A nonimage restore of an Alpha system disk from an image save set

The Writeboot utility also allows you to rewrite the boot block of an OpenVMS Alpha system disk to point to a new version of the OpenVMS Alpha primary bootstrap file (APB.EXE) that you have previously copied to the disk. (Note that the file must be contiguous.)

To invoke the Writeboot utility, enter the following command:

```
$ RUN SYS$SYSTEM:WRITEBOOT
```

The utility prompts you as follows:

```
Update VAX portion of boot block (default is Y):
Update Alpha portion of boot block (default is Y):
```

Answer N (No) to the VAX prompt. If you answer Y (Yes) to update the Alpha boot block, the utility prompts you for the Alpha boot file:

```
Enter Alpha boot file:
```

Specify *device-name:*[VMS$COMMON.SYSEXE]APB.EXE in response to this prompt, where *device-name:* indicates the device on which the system disk is mounted.

A.3 Halt and Shutdown Operations

The following sections describe halt and shutdown operations for Alpha computers.

A.3.1 Halting the System

During installation, upgrade, and related system operations, you might need to halt your system. The methods for halting Alpha computers differ slightly with certain models, as described in the next section.

The following table summarizes the ways you can halt specific Alpha computers:

Alpha Computer	How to Halt
AlphaServer 300, 800, 1000, 1200, 2000, 2100 series	Do one of the following: • Press the Halt button. • Press Ctrl/P.
AlphaServer 8200, 8400 series	Press Ctrl/P.
AlphaStation 200, 400, 500, 600 series	Do one of the following: • Press the Halt button (if the graphics monitor is serving as the console). • Press Ctrl/P (if you are using the alternate console and port).

Alpha Computer	How to Halt
DEC 2000, 3000 series	Do one of the following: • Press the Halt button (if the graphics monitor is serving as the console). • Press Ctrl/P (if you are using the alternate console and port).
DEC 4000 series	Do one of the following: • Press the Halt button. • Press the Break key on the console (the default setting). • Press Ctrl/P, but only after using the console command SET TTA0_HALTS *n* to enable this key combination, where *n* can be 6 (enables the Break key and Ctrl/P) or 2 (enables Ctrl/P but disables the Break key).
DEC 7000, 10000 series	Press Ctrl/P.

A.3.2 Shutting Down the System

Before you shut down the operating system, decide if you want it to reboot automatically or if you want to enter console-mode commands after the shutdown completes.

You can perform the following three types of shutdown operations:

- An orderly shutdown with SYS$SYSTEM:SHUTDOWN.COM
- An emergency shutdown with OPCCRASH.EXE
- An emergency shutdown with crash commands

If you want the system to reboot automatically after the shutdown, see Section A.2.1.

A.3.2.1 Orderly Shutdown

The SHUTDOWN.COM procedure shuts down the system while performing maintenance functions such as disabling future logins, stopping the batch and printer queues, dismounting volumes, and stopping user processes. To use the SHUTDOWN.COM command procedure, log in to the SYSTEM account, enter the following command, and press the Return key:

```
$ @SYS$SYSTEM:SHUTDOWN
```

For more information about the SHUTDOWN.COM command procedure, see the *OpenVMS System Manager's Manual*.

A.3.2.2 Emergency Shutdown with OPCCRASH.EXE

If you cannot perform an orderly shutdown with the SHUTDOWN.COM procedure, run the OPCCRASH.EXE emergency shutdown program. To run the OPCCRASH.EXE program, log in to the SYSTEM account, enter the following command, and press the Return key:

```
$ RUN SYS$SYSTEM:OPCCRASH
```

For more information about the OPCCRASH program, see the *OpenVMS System Manager's Manual*.

A.3.2.3 Emergency Shutdown with Crash Commands

Use crash commands only if the system is ''hung'' (stops responding to any commands) and you cannot log in to the SYSTEM account to use the SHUTDOWN.COM procedure or the OPCCRASH.EXE program.

Note

The method described here works on all Alpha computers. However, on certain systems, you can force your processor to fail (crash) by entering a specific console command. See the hardware manuals that came with your computer for that information.

To force your processor to fail, do the following:

1. Halt the system by entering Ctrl/P or by pressing the Halt button. (See Section A.3.1 for more information about how to halt your Alpha computer.)
2. To examine processor registers, enter the following commands and press the Return key:

   ```
   >>> E -N F R0
   >>> E PS
   ```

   The system displays the contents of the registers. Write down these values if you want to save information about the state of the system.
3. Enter the following commands and press the Return key:

   ```
   >>> D PC FFFFFFFF00000000
   >>> D PS 1F00
   ```

   By depositing these values, you cause the system to write a memory dump to the system dump file on the disk.
4. Enter the following command and press the Return key:

   ```
   >>> CONTINUE
   ```

   This causes the system to perform a bugcheck.
5. After the system reboots, log in to the SYSTEM account.
6. To examine the dump file, enter the following commands and press the Return key after each one:

   ```
   $ ANALYZE/CRASH SYS$SYSTEM:SYSDUMP.DMP
   SDA> SHOW CRASH
   ```

   For more information about the System Dump Analyzer (SDA) utility, see the *OpenVMS Alpha System Dump Analyzer Utility Manual*.

A.4 Troubleshooting Procedures

The following sections describe procedures that you can follow if you encounter problems with your system.

A.4.1 If the System Does Not Boot

If the system does not boot because a hardware problem occurs, a question mark (?) usually precedes the error message displayed on the console terminal. An example of a hardware problem is a read error on a disk or tape cartridge drive.

A.4.1.1 For Hardware Problems

If you suspect a hardware problem, do the following:

1. Consult the hardware manual for your Alpha computer.
2. Contact a Compaq support representative.

A.4.1.2 For Software Problems

When the operating system is loaded into memory, a message similar to the following appears on the terminal screen:

```
SYSTEM   job terminated at 19-SEP-1997 15:05:03.17
```

If the system does not display this message, a software problem has probably occurred. Do the following:

1. Turn off the system. Turn it back on and try to reboot.
2. Perform a conversational boot using the default system parameters or try one of the emergency boot procedures.
3. If the system boots, run the AUTOGEN procedure. For more information about the AUTOGEN procedure, see the *OpenVMS System Manager's Manual*.

A.4.2 Detecting and Responding to System Problems

If your system exhibits unexpected behavior, note the following:

- If the system displays a bugcheck message on the console terminal and shuts itself down, it means the system encountered a problem that made further operation impossible or dangerous. Reboot the system as explained in Section A.1.2, or let it reboot automatically as explained in Section A.2.1.
- If the system stops responding to your commands (that is, the system ''hangs''), there is a possible failure in a system software or hardware component or a possible power failure.
- If the system exhibits erratic behavior (it does not respond according to specifications), it indicates a possible failure in a system software or hardware component.

To determine if the failure is a system problem:

- Be sure that you did not press the F1 key (the Hold Screen key). The Hold Screen light goes on when you press either F1 or enter Ctrl/S.
- Enter Ctrl/T to check the status of your process. A status line should appear, indicating the name of the program that is executing and other information. If the status line does not appear, the program you are executing might be stalled or ''hung.'' (If you have disabled Ctrl/T by entering the command SET NOCONTROL=T or have set the terminal to NOBROADCAST mode by entering the command SET TERMINAL/NOBROADCAST, this procedure does not work.)
- Make sure the cable connecting the terminal or monitor to the system is secure.

If you determine that you have a system problem:

1. Force an exit from a stalled or ''hung'' program by entering Ctrl/Y. Note that when you enter Ctrl/Y, any work performed by the program and not saved on disk is lost.

2. If the system is still unresponsive, halt it by entering Ctrl/P or by pressing the Halt button. (See Section A.3.1 for more information about how to halt your Alpha computer.)
3. Note in detail the sequence of events that caused the problem and notify a Compaq support representative.

B

Backing Up and Restoring the System Disk

This appendix describes how to perform backup and restore operations on the system disk. You perform these tasks by entering commands from a specialized backup environment. You access this environment through the menu that is displayed when you boot the OpenVMS Alpha operating system CD–ROM or through an alternate method that does not require the CD–ROM.

This specialized backup environment is required because it allows you to create an *exact* copy of the system disk. You cannot create an exact copy in a standard operating system environment because the OpenVMS Backup utility saves only what is on the disk at the moment the BACKUP command is executing, excluding portions of open files contained in memory or data about files not yet written back to the disk (cache).

For more information about backup operations, including procedures for backing up and restoring files and directories, see the *OpenVMS System Manager's Manual*.

B.1 Reasons for Backing Up the System Disk

The primary reason why you should have a backup copy of the system disk is so you can fully restore your system in response to any hardware or software problem that affects the integrity of your original system disk or your ability to access it. For example, you would need to use the backup copy to restore your system under the following conditions:

- When a problem occurs during an OpenVMS Alpha upgrade or update, or during the installation of other software products. If you backed up the system disk *before* you attempted any of those procedures, you could restore the system disk and attempt the procedure again.
- When a system file that is accidentally deleted renders the system disk inoperable. If you backed up the system disk *after* you installed or upgraded the OpenVMS Alpha operating system and any other software products, you could restore the system disk.
- When the drive that holds the system disk malfunctions. If you have a backup copy of the system disk, you can restore it to a functioning disk and continue to use the system.

Another reason for backing up the system disk is to eliminate disk fragmentation, which occurs when files are stored noncontiguously on the disk. The BACKUP /IMAGE command creates a copy on which files are stored contiguously.

B.2 Suggested Procedures

Compaq recommends the following:

- The preferred method for performing system disk backup and restore operations is to boot the operating system CD–ROM, choose the DCL option from menu, and then enter the appropriate backup commands. The detailed procedures are described in Section B.4 and Section B.5.

  However, if you do not have access to the compact disc or if you want to back up a shadowed system disk without disabling the shadow set, you can use a different procedure, described in Section B.6.

- Store the backup media in a safe place.

- If you have an OpenVMS Cluster environment with more than one system disk, be sure the volume label on each system disk and backup copies of system disks are unique. Use the SET VOLUME/LABEL command to change a volume label, if necessary.

B.3 OpenVMS Cluster Caution

If any nodes except the node used to run BACKUP are booted during the backup operations described in this appendix, your cluster will become partitioned, where nodes in the existing cluster divide into two or more independent clusters. This condition can cause data file corruption.

In addition, these backup environments do not restrict your use of DCL commands to the BACKUP command only, which further increases your risk of accidentally destroying or corrupting data on a disk. Therefore, to avoid jeopardizing the integrity of your data in any way, Compaq recommends that you shut down the entire OpenVMS Cluster system before you back up your system disk.

B.4 Backing Up the System Disk

The following sections describe how to back up the system disk.

B.4.1 Getting Started

Before you back up the system disk, do the following:

1. In an OpenVMS Cluster environment, dismount the system disk from all systems in the cluster that have the disk mounted as a data disk (rather than as the system disk).
2. Shut down all systems booted from that disk.
3. Boot the operating system CD–ROM locally or from the InfoServer (as described in Appendix A).
4. Choose the DCL option (7) from the menu. For example:

```
****************************************************************

You can install or upgrade the OpenVMS Alpha operating system
or you can install or upgrade layered products that are included
on the OpenVMS Alpha operating system CD-ROM.

You can also execute DCL commands and procedures to perform
"standalone" tasks, such as backing up the system disk.

Please choose one of the following:
```

```
        1)  Install or upgrade OpenVMS Alpha Version V7.2
        2)  Display products and patches that this procedure can install
        3)  Install or upgrade layered products and patches
        4)  Show installed products
        5)  Reconfigure installed products
        6)  Remove installed products
        7)  Execute DCL commands and procedures
        8)  Shut down this system

    Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 7
```

5. At the triple dollar sign prompt ($$$), enter the SHOW DEVICES command.
6. Examine the list of devices so you can determine which device is the source drive (the system disk you want to back up) and which device is your target drive (the supported disk or tape device that will hold the backed up files).

B.4.2 Mounting Devices

When you have determined which devices will be the source drive and target drive, mount those devices (and any other output devices you plan to use) before you perform any backup operations. Enter the MOUNT commands in the following format:

```
$$$ MOUNT/OVERRIDE=IDENTIFICATION source-drive
$$$ MOUNT/FOREIGN target-drive
```

Note the following conventions:

- *source-drive* is the name of the drive holding the system disk.
- *target-drive* is the name of the drive that will hold the backup files.

B.4.3 Entering the BACKUP Command

When the system disk and output devices are mounted, back up the system disk by entering the BACKUP command in the following format:

```
$$$ BACKUP/IMAGE/VERIFY source-drive:
target-drive:
```

(You must also include the save-set name and the /SAVE_SET qualifier if the target drive is a tape device.)

Example 1

In this example the system disk and a target disk are mounted so the BACKUP command can create a backup disk. (You can use a backup disk as a system disk.)

```
$$$ MOUNT/OVERRIDE=IDENTIFICATION DKA200
$$$ MOUNT/FOREIGN DKA300
$$$ BACKUP/IMAGE/VERIFY DKA200: DKA300:
```

Example 2

In this example the system disk and a target tape device are mounted so the BACKUP command can create a backup tape.

```
$$$ MOUNT/OVERRIDE=IDENTIFICATION DKA200
$$$ MOUNT/FOREIGN MKA300
$$$ BACKUP/IMAGE/VERIFY DKA200: MKA300:APR_06_BACKUP.BCK/SAVE_SET
```

B.4.4 Changing the CLUSTER_SIZE Parameter

The BACKUP command creates a system disk that includes a set of volume parameters provided by Compaq, including a CLUSTER_SIZE (disk access scheme) that is appropriate for your system. (The CLUSTER_SIZE refers to the way files are stored on the disk, *not* to cluster environments.) You can change most volume parameters later with the SET VOLUME command.

However, to change the CLUSTER_SIZE, you must back up the system disk to a disk that has been previously initialized with the CLUSTER_SIZE that you want. For more information about initializing a disk and using the BACKUP command, see the *OpenVMS System Manager's Manual* and the *OpenVMS System Management Utilities Reference Manual*, and see the description of the INITIALIZE and BACKUP commands in the *OpenVMS DCL Dictionary*.

B.4.5 What to Do Next

After you complete the backup operation:

1. Enter the LOGOUT command to exit from the DCL environment and return to the menu.
2. Choose the shutdown option (8).
3. After the shutdown completes, boot from the system disk.

B.5 Restoring the System Disk

The following sections describe how to restore the system disk.

B.5.1 Getting Started

Before you can restore the system disk:

1. Shut down the system.
2. Boot the operating system CD–ROM locally or from the InfoServer (as described in Appendix A).
3. Choose the DCL option (7) from the menu. For example:

```
************************************************************

You can install or upgrade the OpenVMS Alpha operating system
or you can install or upgrade layered products that are included
on the OpenVMS Alpha operating system CD-ROM.

You can also execute DCL commands and procedures to perform
"standalone" tasks, such as backing up the system disk.

Please choose one of the following:

    1)  Install or upgrade OpenVMS Alpha Version V7.2
    2)  Display products and patches that this procedure can install
    3)  Install or upgrade layered products and patches
    4)  Show installed products
    5)  Reconfigure installed products
    6)  Remove installed products
    7)  Execute DCL commands and procedures
    8)  Shut down this system

Enter CHOICE or ? for help: (1/2/3/4/5/6/7/8/?) 7
```

4. At the triple dollar sign prompt ($$$), enter the SHOW DEVICES command.

5. Examine the list of devices so you can determine which device is the source drive (the drive holding the backed up files you want to restore) and which device is your target drive (the disk on which you want the files restored).

B.5.2 Mounting Devices

When you have determined which devices will be the source drive and target drive, mount those devices (and any other output devices you plan to use) before you perform any restore operations. Enter the MOUNT commands in the following format:

```
$$$ MOUNT/OVERRIDE=IDENTIFICATION  source-drive
$$$ MOUNT/FOREIGN target-drive
```

Note the following conventions:

- *source-drive* is the device holding the files you want to restore.

  (Note, however, that you must use the MOUNT/FOREIGN command if the source drive is a tape device.)

- *target-drive* is the destination.

B.5.3 Entering the BACKUP Command

Enter the BACKUP command in the following format:

```
$$$ BACKUP/IMAGE/VERIFY source-drive:
target-drive:
```

(You must also include the save set name and the /SAVE_SET qualifier if the source drive is a tape device.)

Example 1

In this example a backup disk and a target disk are mounted so the BACKUP command can restore the system disk from the backup disk:

```
$$$ MOUNT/OVERRIDE=IDENTIFICATION DKA300
$$$ MOUNT/FOREIGN DKA200
$$$ BACKUP/IMAGE/VERIFY DKA300: DKA200:
```

Example 2

In this example a backup tape and a target disk are mounted so the BACKUP command can restore the system disk from the backup tape:

```
$$$ MOUNT/FOREIGN MKA300
$$$ MOUNT/FOREIGN DKA200
$$$ BACKUP/IMAGE/VERIFY MKA300:APR_06_BACKUP.BCK/SAVE_SET DKA200:
```

B.5.4 What to Do Next

After you complete the restore operation:

1. Enter the LOGOUT command to exit from the DCL environment and return to the menu.
2. Choose the shutdown option (8).
3. After the shutdown completes, boot from the system disk.

B.6 Alternate Backup and Restore Procedure

This section describes an alternate method of performing backup and restore operations on your system disk. With this method, you install the operating system (without options) on another disk and perform your backup and restore operations on the system disk from there. Use this method under the following conditions:

- If you do not have access to the operating system CD–ROM and its menu system
- If you want to back up a shadowed system disk without disabling the shadow set

Note

It is also possible to back up your running system disk by using the qualifier /IGNORE=INTERLOCK with the BACKUP command and ignoring warning messages. However, that method requires that all other use of the system be suspended, including disabling logins, stopping print and batch queues, and turning off networking software. In addition, you cannot use this method to restore files to the running system disk. Because of these limitations, Compaq recommends that if you must use an alternate method to back up or restore the system disk, you use the method described in this section.

B.6.1 Preparing an Alternate System Disk

Prepare an alternate system disk as follows:

1. Log in to a privileged account on your running OpenVMS Alpha system.
2. Using the SHOW DEVICE command, identify a data disk on which you can install the operating system, with no options. This will be your target disk during that installation. Note the following:
   - You will need approximately 75,000 blocks to install the operating system with no options.
   - Existing data will remain on the disk.
3. The target disk must be mounted privately to your process. (This prevents other users from accessing this disk during the installation and backup procedures.) Therefore, if the target disk was mounted with /SYSTEM, /CLUSTER, /GROUP, or /SHARE, dismount that disk and mount it without using those qualifiers or the /FOREIGN qualifier. For example:

   ```
   $ MOUNT/OVERRIDE=IDENTIFICATION DKA200
   ```

4. Enter the following command to install the OpenVMS Alpha operating system, with no options, on the target disk:

   ```
   $ @SYS$SYSTEM:AXPVMS$PCSI_INSTALL_MIN.COM [target-disk]
   ```

   (The procedure will prompt you for a device name if you do not specify it on the command line.)

5. As the procedure completes the installation, the display is similar to the following:

```
DEC AXPVMS OPENVMS V7.2: OpenVMS and related products platform

    COPYRIGHT (c) 12-SEP-1998 -- All rights reserved

    Compaq Computer Corporation

Execution phase starting ...

The following product will be installed:
    DEC AXPVMS VMS V7.2


Portion Done: 0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%

The following product has been installed:
    DEC AXPVMS VMS V7.2
    .
    .
    .
    The installation of minimum OpenVMS Alpha is now complete.

    Use the following command to boot minimum OpenVMS:

        BOOT -FLAGS E,0 <device-name>

    (Your system may require additional parameters to boot.)
```

Caution

If your system is a cluster member, Compaq recommends that you shut down the entire OpenVMS Cluster system before you back up your system disk. This will prevent you from creating a partitioned cluster and from jeopardizing the integrity of your data in any other way.

B.6.2 Using the Alternate System Disk

Use the alternate system disk (on which you installed the operating system with no options) to perform backup and restore operations as follows:

1. Shut down your system.
2. Boot the alternate system disk from the SYSE root. For example:

   ```
   >>> BOOT -FLAGS E,0 DKA200
   ```

   The system automatically logs you in to the SYSTEM account and then displays a triple dollar sign prompt ($$$).

   Note

   During the boot and login operations on this minimum version of the operating system, you can ignore license messages that are similar to the following:

   ```
   %LICENSE-I-NOLICENSE, no license is active for this software product
   ```

3. If your system disk is shadowed, install and load a Volume Shadowing license on this data disk. You will then be able to back up the shadowed system disk from this data disk without disabling the shadow set.

Note

Compaq recommends that you do *not* install any other licenses, including OpenVMS licenses, on this alternate system. You will be able to use the system only from the console.

4. Mount the system disk and any output devices you plan to use during the backup or restore operations. See Section B.5.2 for more information.
5. Perform the necessary backup and restore operations by entering the appropriate BACKUP commands. See Section B.5.3 for more information.
6. Shut down the system.
7. Boot from your original system disk.

C
License Management Supplement

This appendix contains information that supplements the license instructions in this manual and in the *OpenVMS License Management Utility Manual*.

After you install the OpenVMS Alpha operating system, you must register OpenVMS Alpha licenses, which let you use the OpenVMS Alpha operating system. You must also register the licenses for the OpenVMS Alpha layered products you have purchased, such as DECnet for OpenVMS. (Note that after an upgrade, however, you do not have to reregister licenses for the OpenVMS Alpha operating system or for the layered products.) To register a license, you need to obtain a Product Authorization Key (PAK). A PAK is a printed document provided by Compaq that contains the appropriate information to authorize access to software on an Alpha computer (or in an OpenVMS Cluster environment). You can obtain a PAK from a Compaq support representative in the same way as you obtain software.

C.1 Using the License Unit Requirement Table (LURT)

Many PAKs contain a table name in the availability or activity fields. This name refers to a column in the License Unit Requirement Table (LURT), which is shown in Table C–1. Column A in the LURT indicates the number of license units required for each processor listed in the System Marketing Model column. Column H refers to layered products you may choose to register as well. For example, if your PAK specifies *availability = A*, you would require 50 license units to load the license on a DEC 3000 Alpha Model 500 series computer, or 500 license units to load the license on a DEC 7000 Alpha Model 610 computer.

Note that some PAKs specify MOD_UNITS in the options field. The MOD_UNITS option allows the system manager to use the DCL command LICENSE MODIFY /UNITS to temporarily increase the size of the PAK. This permits a product to be used, in certain emergency situations, on a processor larger than the processor size specified in the license. Check your license terms and conditions before modifying license units. Reset the PAK size to its original size after the emergency situation is resolved.

License Management Supplement
C.1 Using the License Unit Requirement Table (LURT)

Table C–1 License Unit Requirement Table (LURT)

System Marketing Model	A	H
ALPHAbook 1	12	1050
AlphaServer 400	12	1050
AlphaServer 800, 1000, 1000A	15	1050
AlphaServer 1200 (1 CPU)	25	1050
AlphaServer 1200 (2 CPU)	75	1050
AlphaServer 2000, 2000A (1 CPU)	400	1100
AlphaServer 2000, 2000A (2 CPU)	500	1100
AlphaServer 2100, 2100A (1 CPU)	400	1100
AlphaServer 2100, 2100A (2 CPU)	500	1100
AlphaServer 2100, 2100A (3 CPU)	600	1100
AlphaServer 2100, 2100A (4 CPU)	700	1100
AlphaServer 4100 (1 CPU)	400	1100
AlphaServer 4100 (2 CPU)	500	1100
AlphaServer 4100 (3 CPU)	600	1100
AlphaServer 4100 (4 CPU)	700	1100
AlphaServer 8200 (1 CPU)	2000	1150
AlphaServer 8200 (2 CPU)	2100	1150
AlphaServer 8200 (3 CPU)	2200	1150
AlphaServer 8200 (4 CPU)	2300	1150
AlphaServer 8200 (5 CPU)	2400	1150
AlphaServer 8200 (6 CPU)	2500	1150
AlphaServer 8400 (1 CPU)	2600	1150
AlphaServer 8400 (2 CPU)	2700	1150
AlphaServer 8400 (3 CPU)	2800	1150
AlphaServer 8400 (4 CPU)	2900	1150
AlphaServer 8400 (5 CPU)	3000	1150
AlphaServer 8400 (6 CPU)	3100	1150
AlphaServer 8400 (7 CPU)	3200	1150
AlphaServer 8400 (8 CPU)	3300	1150
AlphaServer 8400 (9 CPU)	3400	1150
AlphaServer 8400 (10 CPU)	3500	1150
AlphaServer 8400 (11 CPU)	2600	1150
AlphaServer 8400 (12 CPU)	2600	1150
AlphaStation 205, 250, 255, 500	12	1050

Key to License Type Codes and Values:

A—The number of OpenVMS Alpha operating system license units (Unlimited or Base) required for the system.
B through G—Omitted from table; reserved for future use.
H— The number of OpenVMS Alpha layered products license units required for the system.

(continued on next page)

Table C–1 (Cont.) License Unit Requirement Table (LURT)

System Marketing Model	A	H
AlphaStation 400	12	1050
AlphaStation 600	12	1050
DEC 2000-300/300S	12	1050
DEC 2000-500/500S	12	1050
DEC 3000-300	15	1050
DEC 3000-300L	15	1050
DEC 3000-400/400S	20	1050
DEC 3000-600/600S	20	1050
DEC 3000-500/500S	50	1100
DEC 3000-500X	50	1100
DEC 3000-800/800S	50	1100
DEC 4000-610	300	1150
DEC 4000-620	400	1200
DEC 4000-710	300	1150
DEC 4000-720	400	1200
DEC 7000-610	500	1200
DEC 7000-620	600	1250
DEC 7000-630	700	1250
DEC 7000-640	800	1250
DEC 10000-610	800	1250
DEC 10000-620	900	1300
DEC 10000-630	1000	1300
DEC 10000-640	1100	1300

Key to License Type Codes and Values:

A—The number of OpenVMS Alpha operating system license units (Unlimited or Base) required for the system.
B through G—Omitted from table; reserved for future use.
H— The number of OpenVMS Alpha layered products license units required for the system.

C.2 License Management Facility (LMF) Notes

The following list addresses some common concerns and questions regarding the License Management Facility (LMF). For full explanations of these issues, see the *OpenVMS License Management Utility Manual*.

- If you do not have a valid OpenVMS Alpha license that is registered and activated, the system displays a warning message as part of system startup and restricts system use to the operator's console, OPA0.
- If a checksum error is displayed when you register a license, check *all* the fields of data that you entered, including the checksum itself.
- After your PAKs are registered, they are activated (loaded) automatically as part of each system startup.
- If an OpenVMS Alpha license is registered with insufficient license units, the system displays the following message when the user (process) attempts to log in:

  ```
  %LICENSE-F-EXCEEDED, licensed product has exceeded current license limits
  ```

  Users can always log in to the operator's console, OPA0, however.
- The default LICENSE database is located in the file SYS$COMMON:[SYSEXE]LMF$LICENSE.LDB. You can move the database, although Compaq does not recommend doing so. If you move the database, you must either define the logical name LMF$LICENSE at the system level to point to the new database or use the /DATABASE=*filespec* qualifier with all LICENSE commands. To redirect LMF to another database location on a more permanent basis, add the following line to the command procedure SYS$MANAGER:SYLOGICALS.COM:

  ```
  $ DEFINE/SYSTEM LMF$LICENSE device:[directory]LMF$LICENSE.LDB
  ```

  If you specify a device other than SYS$SYSDEVICE, you must also mount the specified disk from the SYLOGICALS.COM command procedure.
- Each OpenVMS Alpha find license is restricted to a single node for permanent PAKs. You must assign a System Communications Services (SCS) name to the license when you register with the VMSLICENSE.COM command procedure, or you must enter a LICENSE MODIFY/INCLUDE=*node-name* command after you register the license.

  Note

  The SCS node name is not necessarily the DECnet node name. SCSNODE is a system parameter; it can be a maximum of six alphabetic characters.

C.2.1 Restrictions

Availability Product Authorization Keys (PAKs) are available for the OpenVMS Alpha operating system. An OpenVMS Alpha PAK is identified by the keyword ALPHA in the PAK's option field. Note the following restrictions:

- PAKs having the ALPHA option can be loaded and used only on Alpha computers. However, they can safely reside in a license database (LDB) shared by both VAX and Alpha systems.

- Because the LMF for Alpha systems is capable of handling all types of PAKs, including those for VAX systems, Compaq recommends that you perform your LDB tasks using the Alpha LMF.
- Availability PAKs for VAX systems (availability PAKs without the ALPHA option) will not load on Alpha systems. Only those availability PAKs containing the ALPHA option will load on Alpha systems.
- Other PAK types such as activity (also known as concurrent or n-user) and personal use (identified by the RESERVE_UNITS option) work on both VAX and Alpha systems.
- Avoid using the following LICENSE commands from a VAX system on a PAK containing the ALPHA option:
  - REGISTER
  - DELETE/STATUS
  - DISABLE
  - ENABLE
  - ISSUE
  - MOVE
  - COPY
  - LIST
- **Caution:** By default, all Alpha availability PAKs look disabled to a VAX system. Never use the DELETE/STATUS=DISABLED command from a VAX system on an LDB that contains Alpha PAKs. If you do, all Alpha PAKs will be deleted.
- With the exception of the DELETE/STATUS=DISABLED command, if you inadvertently use one of the previously listed LICENSE commands on an Alpha PAK while using a VAX system, the PAK and the database will not be adversely affected. Repeat the command using LMF running on an Alpha system, and the PAK should return to a valid state.
- If you do not repeat the command using LMF on an Alpha system, the system that you intended to disable will remain enabled (the system is not otherwise affected). Only the Alpha LMF can disable an Alpha PAK.

  However, if you attempt to use any of the previously listed commands on a PAK located in an LDB that is shared with a VAX system, the following serious problems may result:
  - Because Alpha PAKs look disabled to a VAX system, they are normally ignored at load time by VAX systems. However, if one of the previously listed commands is entered from a VAX system and the PAK information is not set to a valid state by an Alpha system, there is a chance the VAX system will attempt to load the Alpha PAK. Because the VAX system will be unable to load the PAK, the VAX LMF will report an error.
  - Even if a valid VAX PAK for the affected product is in the LDB, it too may not load. In this case, system users might be denied access to the product.

If the PAK cannot be restored to a valid state because all Alpha systems are inaccessible for any reason, use your VAX system to disable the Alpha PAK. This prevents your VAX system from attempting to load the Alpha PAK.

D

Preparing to Use OpenVMS Management Station

During the OpenVMS installation or upgrade procedure, the OpenVMS Management Station software is automatically installed on your OpenVMS system disk when you accept all the default values.

If you did not accept the default values and did *not* manually select the OpenVMS Management Station component, you must add those files to your OpenVMS system disk before you follow the instructions in this appendix.

Use the OpenVMS operating system CD–ROM and the DCL command PRODUCT INSTALL TNT to add the OpenVMS Management Station files to your system. (See the *OpenVMS System Management Utilities Reference Manual: M–Z* for complete information about using the PRODUCT command.)

After you have ensured that OpenVMS Management Station software is installed on your system, follow the procedures described in this appendix.

D.1 Preparing Your OpenVMS System

You must prepare your OpenVMS system to run the server software so that your system can properly interact with the PC running the client software. The procedures include the following:

- Set up within a mixed-architecture cluster environment (if applicable).
- Start the server on other nodes.
- Update the printer and storage database.
- Edit the system files.
- Allow OpenVMS Management Station to control the printer and storage environment.
- Keep your printer environment up to date.
- Check if running third-party TCP/IP stacks.
- Recover from a failure.
- Determine and report problems.

D.1.1 Setting Up in a Mixed-Architecture Cluster Environment

The OpenVMS Management Station server creates several configuration files:

- TNT$UADB.DAT
- TNT$ACS.DAT
- TNT$JOURNAL.TNT$TRANSACTION_JOURNAL
- TNT$MONITOR.DAT

- TNT$MONITOR.TNT$MONITOR_JOURNAL
- TNT$EMERGENCY_MOUNT.COM

In a common-environment cluster with one common system disk, you use a common copy of each of these files located in the SYS$COMMON:[SYSEXE] directory on the common system disk, or on a disk that is mounted by all cluster nodes. No further action is required.

However, to prepare a common user environment for an OpenVMS Cluster system that includes more than one common VAX system disk or more than one common Alpha system disk, you must coordinate the files on those disks.

The following rules apply:

- Disks holding common resources must be mounted early in the system startup procedure, such as in the SYLOGICALS.COM procedure.
- You must ensure that the disks are mounted with each cluster reboot.

Follow these steps to coordinate files:

1. Decide where to locate the files. In a cluster with multiple system disks, system management is much easier if the common system files are located on a single disk that is not a system disk.
2. Copy TNT$UADB.DAT, TNT$ACS.DAT, TNT$MONITOR.DAT, TNT$MONITOR.TNT$MONITOR_JOURNAL, TNT$EMERGENCY_MOUNT.COM, and TNT$JOURNAL.TNT$TRANSACTION_JOURNAL to a location other than the system disk.
3. Edit the file SYS$COMMON:[SYSMGR]SYLOGICALS.COM *on each system disk* and define logical names that specify the location of the cluster common files.

   Example

   If the files will be located on 1DJA16, define logical names as follows:

   ```
   $ DEFINE/SYSTEM/EXEC TNT$ACS -
   _$ $1$DJA16:[VMS$COMMON.SYSEXE]TNT$ACS.DAT
   ```

   TNT$EMERGENCY_MOUNT.COM will be created in SYS$SYSTEM or in the directory pointed to by the TNT$ACS logical, if the logical exists.

   ```
   $ DEFINE/SYSTEM/EXEC TNT$UADB -
   _$ $1$DJA16:[VMS$COMMON.SYSEXE]TNT$UADB.DAT

   $ DEFINE/SYSTEM/EXEC TNT$JOURNAL -
   _$ $1$DJA16:[VMS$COMMON.SYSEXE]TNT$JOURNAL.TNT$TRANSACTION_JOURNAL

   $ DEFINE/SYSTEM/EXEC TNT$MONITOR -
   _$ $1$DJA16:[VMS$COMMON.SYSEXE]TNT$MONITOR.DAT

   $ DEFINE/SYSTEM/EXEC TNT$MONITORJOURNAL -
   _$ $1$DJA16:[VMS$COMMON.SYSEXE]TNT$MONITOR.TNT$MONITOR_JOURNAL
   ```

4. To ensure that the system disks are mounted correctly with each reboot, follow these steps:
   1. Copy the SYS$EXAMPLES:CLU_MOUNT_DISK.COM file to the [VMS$COMMON.SYSMGR] directory, and edit it for your configuration.
   2. Edit SYLOGICALS.COM and include commands to mount, with the appropriate volume label, the system disk containing the shared files.

Example

If the system disk is 1DJA16, include the following command:

```
$  @SYS$SYSDEVICE:[VMS$COMMON.SYSMGR]CLU_MOUNT_DISK.COM -
_$ $1$DJA16: volume-label
```

D.1.2 Start the Server on Other Nodes

If you plan to run OpenVMS Management Station on more than one node in an OpenVMS Cluster without a reboot, you need to start the software on those nodes.

Use SYSMAN to start the server as follows:

```
$ @SYS$STARTUP:TNT$STARTUP.COM
```

or, you can log into each node that shares the SYS$COMMON: directory and enter the following command:

```
$ @SYS$STARTUP:TNT$STARTUP.COM
```

If you are performing an upgrade or a reinstallation and OpenVMS Management Station is already running on the node, add the RESTART parameter to the startup command, as follows:

```
$ @SYS$STARTUP:TNT$STARTUP.COM RESTART
```

D.1.3 Error Log Information

OpenVMS Management Station writes error log information to the file TNT$SERVER_ERROR.LOG. This error log is created in the SYS$SPECIFIC:[SYSEXE] directory. If you start the OpenVMS Management Station server on multiple nodes in a cluster, which is recommended, there will be multiple server error logs.

D.1.4 Update the Printer and Storage Database

When you installed OpenVMS Management Station, the installation started the OpenVMS Management Station server on the installation node. If this installation was an upgrade, the server converts the existing OpenVMS Management Station database to the V3.0 format. If this was a new installation, the server creates an initial version of the database file TNT$ACS.DAT and invokes the update functions automatically.

To complete the database, start the OpenVMS Management Station server on each node in your cluster. The instances of the server communicate with each other to determine device, queue, and volume information, and the server must be running on each node for this communication to take place.

D.1.5 Edit the System Files

To start the OpenVMS Management Station server from your system startup files, insert one of the following commands into your system startup procedures (probably SYS$MANAGER:SYSTARTUP_VMS.COM) after both the Queue Manager and network are started, but immediately prior to the ENABLE AUTOSTART/QUEUES.

Note

Remove any other invocations of TNT$STARTUP you might have added in previous releases of the OpenVMS Management Station.

OpenVMS Management Station cannot start until the network has started. If you start your network using a batch process, OpenVMS Management Station might start before the batch process completes and the network is started.

Command	Parameter 1	Parameter 2	Description
@TNT$STARTUP	blank	N.A.	Starts the server. Does not start printer queues or mount volumes.
@TNT$STARTUP	RESTART	N.A.	Shuts down a running server, then starts the server. Does not start printer queues or mount volumes.
@TNT$STARTUP	BOOT	blank	Starts the server. Starts any printer queues that are not yet started and are managed by OpenVMS Management Station. Does not mount volumes managed by OpenVMS Management Station.
@TNT$STARTUP	BOOT	ALL	Starts the server. Starts any printer queues that are not yet started and are managed by OpenVMS Management Station. Mounts any volumes that are not yet mounted and are managed by OpenVMS Management Station.
@TNT$STARTUP	BOOT	PRINTERS	Starts the server. Starts any printer queues that are not yet started and are managed by OpenVMS Management Station. Does not mount volumes managed by OpenVMS Management Station.
@TNT$STARTUP	BOOT	STORAGE	Starts the server. Mounts any volumes that are not yet mounted and are managed by OpenVMS Management Station. Does not start any printer queues.

Note that the effect of TNT$STARTUP BOOT, with no second parameter, has not changed from earlier releases. This command starts any printer queues that are not yet started and are managed by OpenVMS Management Station, but does not mount any volumes.

Add the following command line to the system shutdown file, SYS$MANAGER:SYSHUTDWN.COM:

```
$ @SYS$STARTUP:TNT$SHUTDOWN.COM
```

D.1.6 Allow OpenVMS Management Station to Control the Printer and Storage Environment

It is not necessary to remove your existing queue startup and volume mount DCL procedures immediately. The OpenVMS Management Station server will recognize that you started a queue or mounted a volume with your command procedures and will assume that you want it that way.

As you become familiar with the server's management ability, you can remove or comment out the DCL commands and procedures that perform these tasks and allow OpenVMS Management Station to control your printer and storage environment.

In addition, the OpenVMS Management Station server periodically (every 24 hours) generates a DCL command procedure that includes the commands to mount all of the volumes managed by OpenVMS Management Station. If you are familiar with DCL, you can look at this command procedure to see what actions OpenVMS Management Station performs for you. And, in the event of an unforeseen system problem or a corrupt server database (SYS$SYSTEM:TNT$ACS.DAT), you could use this command procedure to mount the volumes.

The name of the generated file is TNT$EMERGENCY_MOUNT.COM. TNT$EMERGENCY_MOUNT.COM is created in SYS$SYSTEM or in the directory pointed to by the TNT$ACS logical, if that logical name exists.

The OpenVMS Management Station server limits TNT$EMERGENCY_ MOUNT.COM to seven versions.

D.1.7 Keep Your Printer Environment Up to Date

The OpenVMS Management Station server installation creates a file named SYS$STARTUP:TNT$UTILITY.COM. This command procedure scans the OpenVMS system and updates the database of known printers, queues, and related devices.

D.1.7.1 When is the Database Updated?

The database is updated:

- As part of the OpenVMS Management Station installation.
- When you specifically invoke TNT$UTILITY.COM.
- At periodic intervals as a server background thread. Two logical names control how often this server thread runs:

Logical Name	Description
TNT$PRINTER_RECON_ INTERVAL	How often the thread should run, in minutes, from when the server was last started on this node. If you do not define this logical, the default value is 1440 minutes (24 hours).
TNT$PRINTER_RECON_ INTERVAL_MIN	The minimum number of minutes that must elapse before the thread should run again, starting from when the database was last updated. If you do not define this logical, the default value is 60 minutes (1 hour).

You can think of these logicals as meaning ‘‘run the thread this often (TNT$PRINTER_RECON_INTERVAL), but make sure this much time has elapsed since the database was last updated (TNT$PRINTER_RECON_ INTERVAL_MIN).’’

Because you can run TNT$UTILITY.COM yourself, and because the OpenVMS Management Station server also updates the database, the TNT$PRINTER_ RECON_INTERVAL_MIN logical prevents the database from being updated more frequently than is actually needed.

If you want to change the defaults for one of these logicals, define the logical on all nodes on which the OpenVMS Management Station server is running.

D.1.7.2 Do You Need to Run TNT$UTILITY.COM Manually?

If you use OpenVMS Management Station to make all of the changes to your printer configuration, the configuration files are immediately modified to reflect the changes and you probably do not need to specifically run TNT$UTILITY.COM.

However, if you or someone else uses DCL to make a change — for example, if you use the DELETE /QUEUE command to delete a queue — the configuration files will not be synchronized. In this case, the OpenVMS Management Station client will advise you to run TNT$UTILITY.COM to resynchronize the database.

Run the following procedure on one node in the cluster to make the database match your system:

```
$ @SYS$STARTUP:TNT$UTILITY.COM UPDATE PRINTERS
```

For example, if you or someone else used DCL to delete a queue, you need to delete that queue from the database. TNT$UTILITY.COM assumes that your system is set up and running the way that you want it to, so you should fix any problems before you run TNT$UTILITY.COM.

D.1.7.3 Are There Any Requirements for Running TNT$UTILITY.COM?

You need the SYSNAM privilege to run TNT$UTILITY.COM.

TNT$UTILITY.COM connects to the OpenVMS Management Station server on the current OpenVMS system to determine device and queue information. Therefore, the OpenVMS Management Station server must be running on the node where you run TNT$UTILITY.COM.

The OpenVMS Management Station server then connects to the other OpenVMS Management Station servers in the OpenVMS Cluster to determine device and queue information. It is generally a good idea to keep the OpenVMS Management Station server running on the other nodes in an OpenVMS Cluster to keep the database up to the minute.

However, if the OpenVMS Management Server is not able to connect to the OpenVMS Management Station server on a given node, it uses the known information about that OpenVMS node from the database. That is, in the absence of a valid connection to that OpenVMS node, the information in the database is assumed to be correct.

D.1.8 Keeping Your Storage Environment Up to Date

The TNT$UTILITY.COM utility accepts parameters (UPDATE STORAGE) to update the storage database. However, the storage database is updated dynamically every time you use the OpenVMS Management Station client to perform a storage management operation. Therefore, you do not need to run TNT$UTILITY.COM to update the storage database.

D.1.9 Enabling Disk Quotas

Before installing OpenVMS Management Station, you might have disabled disk quotas on the SYSTEM disk. If so, you should reenable the quotas and then rebuild to update quota information by entering the following commands:

```
$ RUN SYS$SYSTEM:DISKQUOTA
DISKQUOTA> ENABLE
DISKQUOTA> REBUILD
DISKQUOTA> EXIT
```

D.1.10 Caching Storage Configuration Data

OpenVMS Management Station uses two logical names to determine how often to refresh cached (in-memory) storage configuration data.

- TNT$PURGE_CYCLE_LATENCY—Determines how often to wait (in seconds) after purging stale device reports before purging again. This value affects how frequently the cluster-wide data (maintained by a ‘‘master server’’ is updated in memory.

  ```
  min = 180
  default =  1800   (30 minutes)
  max = 18000       (5 hours)
  ```

- TNT$LOCAL_SURVEY_LATENCY—Determines the delay (in seconds) from one node-specific device survey to the next. This value is independent of cluster-wide surveys requested by the ‘‘master server’’ when performing a purge.

```
min = 6
default =  60  (1 minute)
max = 600      (10 minutes)
```

For both logical names, smaller values result in the OpenVMS Management Station server consuming more CPU cycles in periodic purges or surveys.

If you do not accept the defaults, you might find that larger OpenVMS Cluster systems behave better with values on the high end of the allowed range.

If you do not define these logicals, the OpenVMS Management Station server uses the default values. If you do define these logical names, the values are used only if they are within the minimum to maximum range.

D.1.11 Running Third-Party TCP/IP Stacks

DIGITAL TCP/IP Services for OpenVMS Version 3.2 or higher is the only supported TCP/IP stack. Additional stacks have not been tested. However, TCP/IP stacks that are 100% compliant with the QIO interface for DIGITAL TCP/IP Services for OpenVMS should also work. (Contact your TCP/IP vendor for additional information and support issues.)

For the best chance of success, check the following:

- Make sure that the QIO service (for example, UCXQIO) is enabled.
- For TCPware, also make sure that TCPware’s UCX$IPC_SHR.EXE is an installed image.
- Also for TCPware, make sure you are running a version of TCPware that correctly implements a DECC-compatible socket interface, such as Version 5.3-3.

D.1.12 Determining and Reporting Problems

If you encounter a problem while using OpenVMS Management Station, please report it to Compaq. Depending on the nature of the problem and the type of support you have, you can take one of the following actions:

- If your software contract or warranty agreement entitles you to telephone support, call Compaq.
- If the problem is related to OpenVMS Management Station documentation, use the Internet address printed in front of this book to send us your comments.

D.1.13 Removing the OpenVMS Management Station Server

If you use the POLYCENTER Software Installation utility to remove OpenVMS Management Station from the OpenVMS system, the following files are not removed:

- TNT$ACS.DAT
- TNT$JOURNAL.TNT$TRANSACTION_JOURNAL
- TNT$SERVER_ERROR.LOG
- TNT$UADB.DAT

- TNT$EMERGENCY_MOUNT.COM

Do not delete these files unless you have already removed OpenVMS Management Station.

D.2 Preparing Your PC

During the OpenVMS installation or upgrade procedure, you selected the OpenVMS Management Station client software files to be installed on your OpenVMS system disk (or you added them later using the DCL command PRODUCT INSTALL TNT). After you have prepared your OpenVMS system to run the server software, you must next prepare your PC to run the client software.

This section includes the following information:

- Required memory and disk space
- Required software
- Installing the client software
- Getting started using OpenVMS Management Station

D.2.1 Required Memory and Disk Space

Your PC requires 13 MB of free disk space to install the OpenVMS Management Station client software.

D.2.2 Distribution Files

There are two versions of the OpenVMS Management Station client kit: TNT030_I.EXE for Intel systems (Windows 95 and Windows NT), and TNT030_A.EXE for Alpha Windows NT systems. Both of these files are located in the SYS$COMMON:[TNT.CLIENT] directory.

The Intel kit will not install under FX!32 running on Alpha processors; use the Alpha native kit in this case.

D.2.3 Required Software

Microsoft Windows NT Versions 4.0 (Service Pack 3 or higher) or Windows 95 or higher (Intel only) must be installed on each PC on which you want to install the OpenVMS Management Station client.

The version of MMC included in this baselevel requires files provided by Microsoft Internet Explorer. Version 3.02 or later of Internet Explorer must be present on the system.

D.2.4 Time Required for Installation

The time required to install the OpenVMS Management Station client software is approximately 5 minutes.

D.2.5 Copy the Client File to the PC

The client files TNT030_I.EXE (Intel) and TNT030_A.EXE (Alpha) are located in the SYS$COMMON:[TNT.CLIENT] directory. Copy either client file to a temporary directory the PC using any of the following procedures:

- Create a file share to the OpenVMS system and copy the file.
- Use FTP on the PC to copy the file from the OpenVMS system.

D.2.6 Installation Directory

The installation procedure allows you to select the installation directory, and suggests \Program Files\OpenVMS Mgmt Station\ as the default.

D.2.7 Installation Procedure

Run TNT030_I.EXE (Intel) or TNT030_A.EXE (Alpha) from a temporary directory. These are self-extracting executable files that automate the OpenVMS Management Station installation.

D.2.8 Recovering from Errors

If an error occurs during installation, you will receive an error message describing the problem. This information can help you determine the cause of the problem. An error can occur during the installation if one or more of the following conditions exist:

- The operating system version is incorrect.
- Disk space and memory necessary for successful installation are inadequate.

D.3 After Installing the Client Software on Your PC

When you create an OpenVMS Cluster or OpenVMS Node object in an OpenVMS Management Domain, you select the transport you want to use for all connections to that system. You can choose DECnet Phase IV or TCP/IP.

OpenVMS Management Station uses this transport for all communications between the PC and this system, or between any other OpenVMS system that is running the OpenVMS Management Station server and this system.

Note

The OpenVMS Management Station client supports only TCP/IP connections for primary servers. That is, the connection between the PC and the OpenVMS system uses only TCP/IP. Therefore, at least one OpenVMS system **must** be running TCP/IP.

You do need to make sure that your PC can connect to the primary-server systems, as described in the following sections. OpenVMS Management Station connects your PC to the primary-server system and then routes management operations to the target systems.

D.3.1 Defining TCP/IP Nodes

Your hosts file or name server must be able to resolve the IP name or address of all primary-server systems. If you can successfully ping the primary-server systems from your PC, then this condition is met.

D.4 Uninstalling Version 2.1 of the OpenVMS Management Station Client

Version 3.0 of the OpenVMS Management Station client is not dependent on Version 2.1 and does not share any files with this prior version. After installing the Version 3.0 client, you can uninstall the Version 2.1 client software.

D.5 Uninstalling OpenVMS Management Station

If you need to uninstall the OpenVMS Management Station client software, make sure you first exit OpenVMS Management Station. The uninstallation fails if OpenVMS Management Station is currently running.

If you run the OpenVMS Management Station Help, the following files might be created:

- VMSMGMT.FTS
- VMSMGMT.GID
- VMSPRINT.FTS
- VMSPRINT.GID
- VMSSCOPE.FTS
- VMSSCOPE.GID
- VMSSTORE.FTS
- VMSSTORE.GID
- VMSACNT.FTS
- VMSACNT.GID

The OpenVMS Management Station Uninstall program does not delete these files. To complete the uninstall:

1. Delete these files
2. Delete the OpenVMS Management Station directory

Note that the OpenVMS Management Station Uninstall program does not uninstall the Microsoft Management Console (MMC) support files.

D.6 Getting Started with OpenVMS Management Station

All information about getting started, setting up, and using OpenVMS Management Station is contained in online help and the *OpenVMS Management Station Overview and Release Notes*.

E

Removing the OpenVMS Alpha Operating System

You can remove the OpenVMS Alpha operating system from your disk in the following ways:

- If the disk contains a small number of user files, copy those user files elsewhere and then reinitialize the disk.
- If the disk contains many user files, use the PRODUCT REMOVE command to remove an obsolete or extra copy of the OpenVMS Alpha operating system without removing any of the user files. Note that you must also delete or archive certain operating system files that the PRODUCT REMOVE command cannot delete.

Follow these steps to remove OpenVMS Alpha operating system files:

1. If your system disk has multiple system-specific roots, boot the system and execute SYS$MANAGER:CLUSTER_CONFIG.COM to remove all roots except the one from which you are booted.
2. Shut down and boot from the distribution CD–ROM or from a system disk other than the one from which OpenVMS Alpha is being removed. Then do one of the following:
   - If OpenVMS Alpha is not running from the distribution CD–ROM, log in to a privileged account.
   - If OpenVMS Alpha is running from the distribution CD–ROM, choose the option to execute DCL commands.
3. Enter the following DCL commands:

   ```
   $ DEFINE/NOLOG PCSI$SYSDEVICE target-disk
   $ DEFINE/NOLOG PCSI$SPECIFIC target-disk:[SYSx.]
   $ DEFINE/NOLOG PCSI$DESTINATION target-disk:[VMS$COMMON]
   $ PRODUCT REMOVE VMS /REMOTE
   ```

   where:

   - *target-disk* is the device name of the disk from which OpenVMS Alpha is being removed.
   - SYS*x* is the root number that you did *not* remove in step 1.
4. If the disk also contains layered products that were installed using the POLYCENTER Software Installation utility, Compaq recommends that you remove them as well. Remove any layered products *before* using the PRODUCT REMOVE VMS command.

Use the following command to remove all the products at once. Select the layered products you want to remove from the menu.

```
$ PRODUCT REMOVE * /REMOTE
```

Use the following commands to remove individual products:

```
$ PRODUCT SHOW PRODUCT/REMOTE
$ PRODUCT REMOVE product-name /REMOTE
```

5. Because the PRODUCT REMOVE command does not delete certain files, review the target disk to determine if you want to delete, move, or archive the operating system files that still remain on the disk.

   Following are lists of the files that the PRODUCT REMOVE command does not delete:

   - In *target-disk*:[SYS*.SYSEXE], where * is 0 or the hexadecimal number of any additional OpenVMS Cluster roots on the target disk:

     ALPHAVMSSYS.PAR
     MODPARAMS.DAT
     PAGEFILE.SYS
     SWAPFILE.SYS

   - In *target-disk*:[VMS$COMMON.SYSEXE]:

     LMF$LICENSE.LDB
     PCSI$FILE_SYSTEM.PCSI$DATABASE
     PCSI$PROCESSOR.PCSI$DATABASE
     PCSI$ROOT.PCSI$DATABASE
     RIGHTSLIST.DAT
     SYSUAF.DAT

   As you examine the preceding lists of files, you may want to archive, rather than delete, the following files:

   ALPHAVMSSYS.PAR
   MODPARAMS.DAT
   LMF$LICENSE.LDB
   RIGHTSLIST.DAT
   SYSUAF.DAT

   Also, if you previously removed layered products, there may be additional files created by the layered products that you may want to delete, move, or archive.

6. Review the target disk for the directory structures [VMS$COMMON...] and [SYS*x*...] that remain after you remove the OpenVMS Alpha operating system. You may want to delete these directories.

   Note that the directories [SYSx]SYSCOMMON.DIR (in all [SYS*x*]) are aliases for the file [000000]VMS$COMMON.DIR. DO NOT DELETE THESE SYSCOMMON.DIR files. Instead, use SET FILE /REMOVE as follows:

   ```
   $SET FILE /REMOVE [SYS*]SYSCOMMON.DIR
   ```

   After you have executed this command and deleted, moved or archived all the files in [VMS$COMMON...] you can delete [000000]VMS$COMMON.DIR. You can then proceed to delete, move or archive the files in each [SYS*x*] directory.

Glossary

This glossary defines key terms in the context of an OpenVMS Alpha computing environment.

boot, bootstrap

The process of loading system software into a processor's main memory. This guide uses the term *boot* to refer to this process.

boot server

An Alpha computer that is part of a local area OpenVMS Cluster. The boot server is a combination of a MOP server and a disk server for the satellite system disk. *See also* satellite node.

CI only OpenVMS Cluster

A computer system consisting of a number of Alpha computers. It uses only the computer interconnect, or CI, to communicate with other Alpha computers in the cluster. These computers share a single file system.

CI

A type of I/O subsystem. It links computers to each other and to HS*x* devices (for example, an HSC or HSD).

device name

The name used to identify a device on the system. A device name indicates the device code, controller designation, and unit number.

disk server

A computer that is part of a local area OpenVMS Cluster. This computer provides an access path to CI, DSSI, and locally connected disks for other computers that do not have a direct connection.

HS*x* device

A self-contained, intelligent, mass storage subsystem (for example, an HSC or HSD) that lets computers in an OpenVMS Cluster environment share disks.

HS*x* drive

Any disk or tape drive connected to an HS*x* device (for example, an HSC or HSD). A system disk on an HS*x* drive can be shared by several computers in an OpenVMS Cluster environment.

InfoServer

A general-purpose disk storage server that allows you to use the operating system CD–ROM to install the operating system on remote client systems connected to the same local area network (LAN).

local area OpenVMS Cluster

A configuration consisting of one or more computers that act as a MOP server and disk server, and a number of low-end computers that act as satellite nodes. The local area network (LAN) connects all of the computers. These computers share a single file system.

local drive

A drive, such as an RRD42 CD–ROM drive, that is connected directly to an Alpha computer. If you have a standalone Alpha computer, it is likely that all drives connected to the system are local drives.

media

Any packaging agent capable of storing computer software (for example, CD–ROMs, magnetic tapes, floppy diskettes, disk packs, and tape cartridges).

mixed interconnect OpenVMS Cluster

A computer system consisting of a number of computers. It uses CI, Ethernet, and DSSI adapters to communicate with other computers in the cluster.

MOP server

A computer system running DECnet software that downline loads OpenVMS Cluster satellites using the DECnet maintenance operations protocol.

OpenVMS Cluster environment

A computer system consisting of a number of Alpha and VAX computers. There are four types of OpenVMS Cluster environments: CI only, DSSI only, local area, and mixed-interconnect.

satellite node

A computer that is part of a local area OpenVMS Cluster. A satellite node is downline loaded from a MOP server and then boots remotely from the system disk served by a disk server in the local area OpenVMS Cluster. *See also* boot server, disk server, MOP server.

scratch disk

A blank disk or a disk with files you no longer need.

source drive

The drive that holds the distribution kit during an upgrade or installation, or the drive from which you restore files to a target disk.

standalone system

A computer system with only one Alpha computer.

system disk

The disk that contains or will contain the OpenVMS Alpha operating system.

target drive

The drive that holds the system disk during an upgrade or installation, or the drive you designate when backing up the system disk.

UETP (User Environment Test Package)

A software package that tests all the standard peripheral devices on your system, various commands and operating system functions, the system's multiuser capability, DECnet software, and the OpenVMS Cluster environment.

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