
OpenVMS VAX Upgrade and Installation Supplement: VAX 8820, 8830, 8840

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This document supplements the current version of the *Upgrade and Installation Manual* with information specific to the VAX 8820, 8830, and 8840 computers. This information includes startup, shutdown, and backup procedures.

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Preface

The *OpenVMS VAX Upgrade and Installation Supplement: VAX 8820, 8830, 8840* contains information specific to the VAX 8820, 8830, and 8840 computers. Use this information in conjunction with the *Upgrade and Installation Manual*.

Important

When you are ready to upgrade, install, or update the VMS operating system, use the supplied documentation as follows:

1. Read all release-specific cover letters (if any) included with your distribution kit.
 2. Read the most current version of the *VMS Release Notes*.
 3. Consult the most current version of the *Upgrade and Installation Manual*. It is your *primary* source of step-by-step upgrade and installation procedures.
 4. Refer to this supplement for computer-specific information when the *Upgrade and Installation Manual* directs you to do so.
 5. Store the hard copy of this supplement and the *Upgrade and Installation Manual* in the binder that contains the *VMS Release Notes*.
-

This guide often refers to the VAX 8820, VAX 8830, and VAX 8840 computers by their abbreviated name, the VAX 8820, 8830, and 8840 computers.

Intended Audience

The *OpenVMS VAX Upgrade and Installation Supplement: VAX 8820, 8830, 8840* is intended for anyone responsible for installing or upgrading the VMS operating system on the VAX 8820, 8830, and 8840 computers.

Document Structure

The *OpenVMS VAX Upgrade and Installation Supplement: VAX 8820, 8830, 8840* is organized as follows:

- Chapter 1 describes parts of the console subsystem that you use during a VMS upgrade or installation.
- Chapter 2 describes tasks you need to perform before installing the VMS operating system. These tasks are specific to the VAX 8820, 8830, and 8840 computers.
- Chapter 3 describes some of the tasks you perform when you install the VMS operating system. These tasks are specific to the VAX 8820, 8830, and 8840 computers.

- Chapter 4 contains instructions for starting up the system. It also describes system shutdown procedures.
- Chapter 5 describes backup procedures you should perform before and after an installation or upgrade and on a regular basis.
- Appendix A explains how to use SYSGEN to connect logical console terminals.
- The Glossary defines terms used in this supplement.

Associated Documents

You must have and be familiar with the contents of the following documents:

- The *Upgrade and Installation Manual*, which is your primary source of upgrade and installation information. Use the *Upgrade and Installation Manual* in conjunction with the *VMS Upgrade and Installation Supplement: VAX 8820, 8830, 8840* when you are performing an installation or upgrade.
- The *VMS Release Notes*, which provides important information on various aspects of the VMS operating system. You should read the *VMS Release Notes* before installing, upgrading, or updating the VMS operating system.
- The *Console User's Guide*, which provides information about the system hardware, as well as instructions for using the console and the console command language.
- Hardware manuals that are supplied with your VAX computer. These manuals provide detailed information on your system hardware.

Conventions

In this manual, every use of VAX VMS means the OpenVMS VAX operating system.

The following conventions are used in this manual:

Ctrl/ <i>x</i>	A sequence such as Ctrl/ <i>x</i> indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
PF1 <i>x</i>	A sequence such as PF1 <i>x</i> indicates that you must first press and release the key labeled PF1, then press and release 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.)
...	A horizontal ellipsis in examples indicates one of the following possibilities: <ul style="list-style-type: none"> • 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 indicates 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 format descriptions, parentheses indicate that, if you choose more than one option, you must enclose the choices in parentheses.
[]	In 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 a VMS file specification, or in the syntax of a substring specification in an assignment statement.)
{ }	In format descriptions, braces surround a required choice of options; you must choose one of the options listed.
boldface text	<p>Boldface text represents the introduction of a new term or the name of an argument, an attribute, or a reason.</p> <p>Boldface text is also used to show user input in online versions of the manual.</p>
<i>italic text</i>	Italic text emphasizes important information, indicates variables, and indicates complete titles of manuals. Italic text also represents information that can vary in system messages (for example, Internal error <i>number</i>), command lines (for example, /PRODUCER= <i>name</i>), and command parameters in text.
UPPERCASE TEXT	Uppercase text indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
-	A hyphen in code examples indicates that additional arguments to the request are provided on the line that follows.
numbers	All numbers in text are assumed to be decimal, unless otherwise noted. Nondecimal radices—binary, octal, or hexadecimal—are explicitly indicated.
mouse	The term <i>mouse</i> refers to any pointing device, such as a mouse, a puck, or a stylus.
MB1, MB2, MB3	MB1 indicates the left mouse button, MB2 indicates the middle mouse button, and MB3 indicates the right mouse button. (The buttons can be redefined by the user.)
PB1, PB2, PB3, PB4	PB1, PB2, PB3, and PB4 indicate buttons on the puck.
SB, SB	SB and SB indicate buttons on the stylus.

Console Subsystem

Before you install or upgrade the VMS operating system, you should be familiar with the console subsystem. The console subsystem consists of the following:

- MicroVAX II microcomputer with console control panel
- Console terminal and optional printer
- Console software
- Console fixed disk drive
- Console tape cartridge drive

In general, use the console subsystem to examine and deposit data in memory or processor registers, stop the processors, and boot the operating system. During installation, use the console subsystem to boot the system and monitor the installation process.

This chapter describes the parts of the console subsystem that you use to install the VMS operating system. For a complete description of the console subsystem, see the *Console User's Guide*.

Note

The console prompts in the examples in this chapter display CPU 0 as the current CPU.

1.1 Console Terminal

The console terminal is the video terminal attached to the console microcomputer. It has the device name OPA0. The console terminal is the only terminal on the system that can execute all the console commands. Use it to control and monitor system operations.

A Digital diagnostics center uses a **remote console terminal** (located at the diagnostics center) to control system operations during diagnostic testing. A remote console terminal has the device name OPA5. It can execute a subset of the console commands.

During the VMS installation and upgrade procedures, Digital recommends that you keep track of system operations by doing the following:

- Save the information in a console log file
- Send the information to a printer

Console Subsystem

1.1 Console Terminal

The console terminal can keep a record of system operations in a **console log file**. Information that has scrolled off the terminal screen is stored in a console log file. When you want a console log file, enter the following command and press the Return key:

```
PS-CIO-0> ENABLE LOG
```

When you no longer want a log file, enter the following command and press Return:

```
PS-CIO-0> DISABLE LOG
```

Another way to keep track of system operations is to attach a printer to the console subsystem. The printer can then record the terminal display. To send the terminal display to the printer, enter the following command and press Return:

```
PS-CIO-0> ENABLE PRINTER
```

To stop sending the terminal display to the printer, enter the following command and press Return:

```
PS-CIO-0> DISABLE PRINTER
```

Appendix A explains how to use SYSGEN to connect logical console terminals.

1.2 Console Prompt

The prompt on the console terminal conveys information about the state of the system. Table 1–1 lists the prompts that might be displayed during the VMS installation procedure.

Table 1–1 Console Prompt

Prompt	Meaning
PS-HW-n> ¹	Power to the system is turned on, but the microcode is not loaded and the system is not initialized.
PS-CIO-n> ¹	Power to the system is turned on, microcode is loaded, and the system is initialized.
PS-OS-n> ¹	The VMS operating system is running, but the console has control.
PCON-SPAWN>	The console software is interpreting DCL commands.
\$	The VMS operating system is running.

¹The n in the prompt represents the CPU that is the current CPU. For example, if the prompt ends with a 0, CPU 0 is the current CPU. If the prompt ends with a 1, CPU 1 is the current CPU.

You can enter some console commands only at certain prompts. For example, enter the HALT command only when PS-OS-0> is displayed.

Other commands are valid at several different prompts. For example, you can enter the COPY command at any of the following prompts:

```
PS-HW-0>
PS-CIO-0>
PCON-SPAWN>
$
```

The *Console User's Guide* contains complete information on console commands and tells when you can use them. The *VMS Upgrade and Installation Supplement: VAX 8820, 8830, 8840* lists only the commands you might need to install or upgrade the VMS operating system. The commands are shown with the prompt that will most likely be displayed during installation.

1.3 Console Commands

Unlike some other VAX computers, the VAX 8820, 8830, and 8840 computers do not have a control panel to set power, auto boot, and auto restart functions. Use the console commands to control all functions. The console commands let you perform the following tasks:

- Turn on the system
- Boot the system
- Obtain information on the operational state of the CPUs and other system components
- Dictate how the system reacts to initial booting, shutdowns, and restarts

Table 1–2 describes some of the commonly used commands.

For more information on the console commands, see the *Console User's Guide*.

Table 1–2 Console Commands

Command	Meaning
BOOT	Boots the system. During the installation procedure you can use the abbreviation B for the BOOT command. The following example uses the boot command procedure DEFBOO.COM to boot the system: PS-CIO-0> B
DEPOSIT	Puts a value in the specified register or memory location. For example, the following command puts a 0 in register 2 (R2): PS-CIO-0> DEPOSIT R2 0
ENABLE/DISABLE AUTO BOOT	In combination with AUTO RESTART, determines how the system reacts after one of the following events: <ul style="list-style-type: none"> • The system is initialized. • A power failure occurs. • An error halt after a restart attempt fails. For example, the following commands cause the system to reboot automatically after any of the preceding events: PS-HW-0> DISABLE AUTO RESTART PS-HW-0> ENABLE AUTO BOOT The following command prevents the system from automatically rebooting after any of the preceding events: PS-HW-0> DISABLE AUTO BOOT

(continued on next page)

Console Subsystem

1.3 Console Commands

Table 1–2 (Cont.) Console Commands

Command	Meaning
ENABLE/DISABLE AUTO POWERON	<p>Determines what happens when power is restored after a power failure. For example, the following command automatically supplies power to the CPU when power is restored after a power failure:</p> <pre>PS-HW-0> ENABLE AUTO POWERON</pre> <p>The following command prevents the automatic supply of power to the CPU when power is restored after a power failure:</p> <pre>PS-HW-0> DISABLE AUTO POWERON</pre>
ENABLE/DISABLE AUTO REBOOT	<p>Determines whether the console executes the boot command procedure DEFBOO.COM after you execute SHUTDOWN.COM and ask for an automatic system reboot. It also causes or prevents automatic system reboot after a system crash.</p>
ENABLE/DISABLE AUTO RESTART	<p>In combination with AUTO BOOT, determines what happens after a power failure or an error halt. For example, the following command causes automatic restart after a power failure or an error halt:</p> <pre>PS-HW-0> ENABLE AUTO RESTART</pre> <p>The following command prevents automatic restart after a power failure or an error halt:</p> <pre>PS-HW-0> DISABLE AUTO RESTART</pre> <p>AUTO RESTART takes precedence over AUTO BOOT. If AUTO RESTART and AUTO BOOT are both enabled, the system first tries to restart. If that fails, the system tries to reboot.</p>
HALT	<p>Halts the execution of macroinstructions in the specified CPU. Use the HALT command to stop a CPU. For example, the following command stops CPU 0:</p> <pre>PS-OS-0> HALT</pre> <p>Do not use the HALT command for a system shutdown; use the procedures described in Chapter 4.</p>
POWER	<p>Changes the state of the power system. For example, the following command turns power on for the entire system (except for the Environmental Monitoring Module [EMM], which is already on):</p> <pre>PS-HW-0> POWER ON</pre> <p>The following command turns power off for all components of the system except the EMM and memory. The contents of memory are preserved.</p> <pre>PS-HW-0> POWER STANDBY</pre> <p>The following command turns power off for the entire system except the EMM (the only time power is off to the EMM is when a power disruption occurs or the circuit breaker that controls power to the system is tripped):</p> <pre>PS-HW-0> POWER OFF</pre>

(continued on next page)

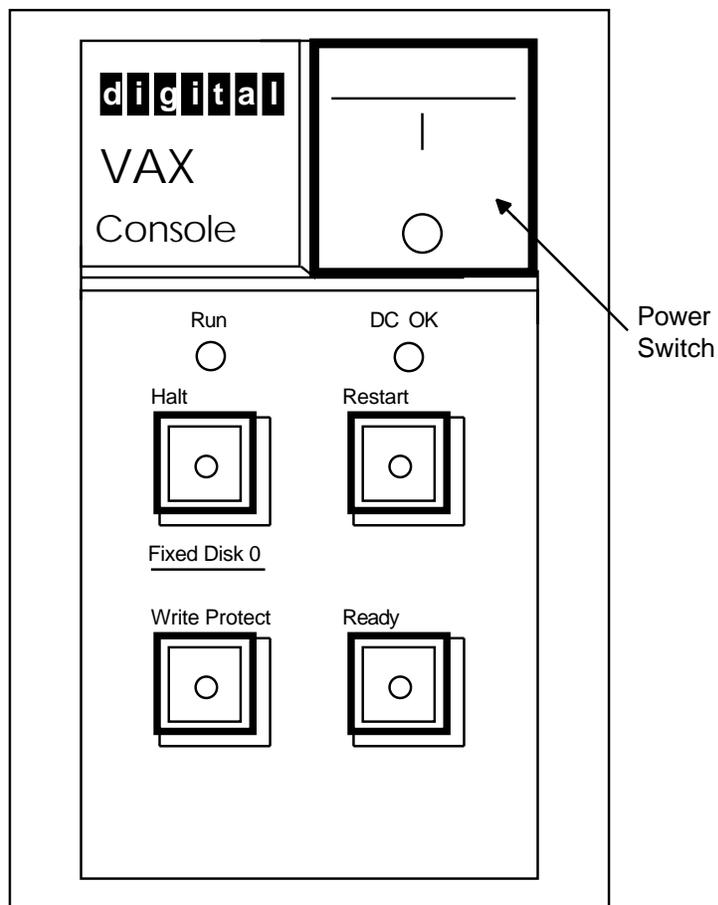
Table 1-2 (Cont.) Console Commands

Command	Meaning
SHOW CPU	Displays information about the CPUs. For example, the following command displays information about all the CPUs: PS-HW-0> SHOW CPU/ALL

1.4 Console Control Panel

Figure 1-1 shows the control panel for the MicroVAX II console subsystem.

Figure 1-1 Control Panel on the Console Subsystem



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Console Subsystem

1.4 Console Control Panel

Table 1–3 explains the functions of the buttons and lights on the control panel.

Table 1–3 Controls and Indicator Lights on the Control Panel

Control/Indicator Light	Description
Power switch	Turns the AC power on. This rocker switch is labeled 1/0 (on/off). The orange light glows when power is on.
Run light	Glow green when the console subsystem is running.
DC OK light	Glow green if all DC voltages are present and within proper tolerance levels.
Halt button	Stops the console subsystem. When you push the Halt button in, it glows red and stays in. Releasing the Halt button, by pressing it again, causes the console subsystem to display the >>> prompt.
Restart button	Stops the console subsystem and runs the ROM-based diagnostics for the console subsystem.
Write Protect button	Controls writing to the console fixed disk. When pushed in, the button glows red and the disk is write-protected. Only the console software has write access to the console fixed disk.
Ready button	Controls writing to or reading from the console fixed disk. When the button is pushed in, the disk is protected from reading or writing. When the button is released, the button glows green; the disk is available for reading and writing. The Ready button flashes when data is read from or written to the fixed disk.

1.5 Console Fixed Disk

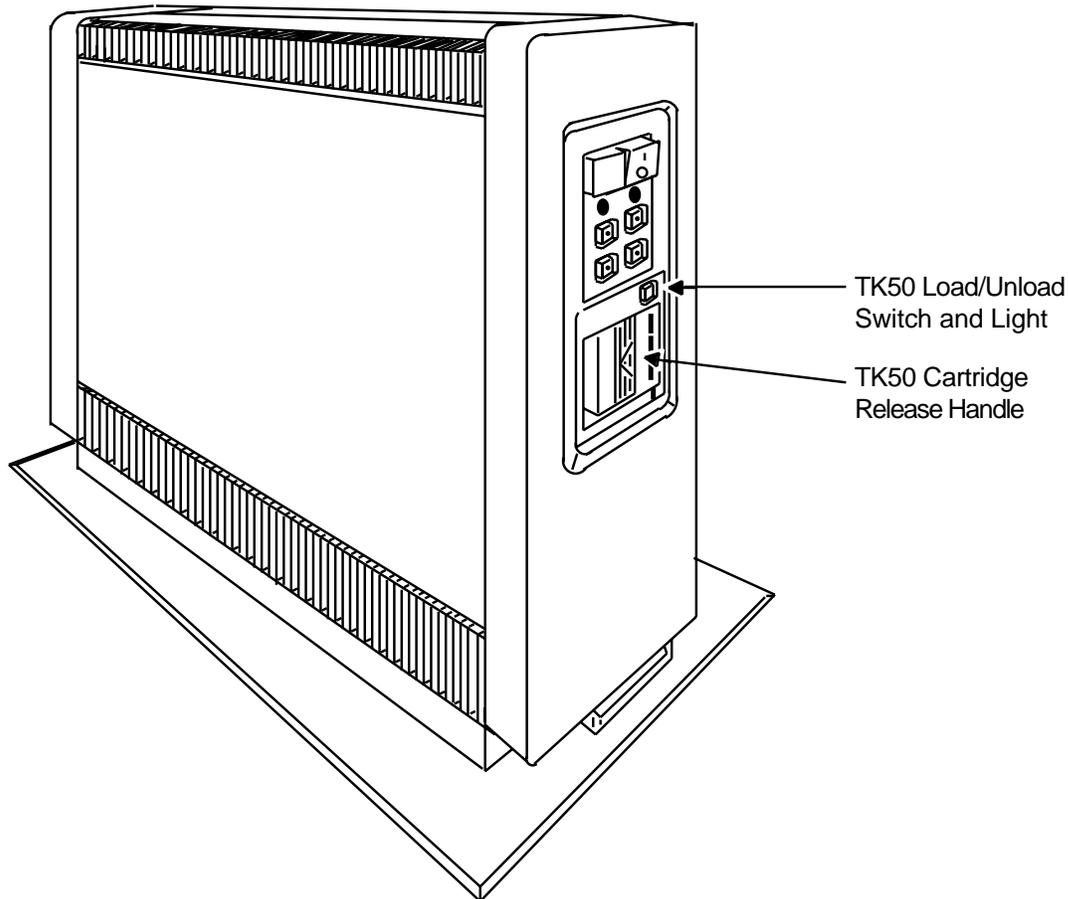
The console fixed disk contains an application program called the **console software**, which runs the console subsystem. When you use the console software, refer to the console fixed disk as DUA0. Otherwise, refer to the console fixed disk as CSA3. You cannot write to the console fixed disk when you are logged in to the VMS operating system on the VAX 8820, 8830, or 8840 computer.

1.6 Console Tape Cartridge Drive

Use the TK50 tape cartridge drive, included in the console subsystem, to install standalone BACKUP on the console fixed disk and to update the console software. Figure 1–2 shows the tape cartridge drive. When you use the console software, refer to the TK50 drive as MUA0. You cannot access this drive when you are logged in to the VMS operating system on the 8820, 8830, or 8840 computer.

Console Subsystem 1.6 Console Tape Cartridge Drive

Figure 1-2 The Console Tape Cartridge Drive



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When using the tape cartridge drive shown in Figure 1-2, you should be aware of the following:

- The green light flashes when the tape in the drive is actually moving (being read from or written to). If a tape cartridge is in the drive and this light is off, the drive is inactive and the tape is not positioned at its beginning.

Caution

Never attempt to remove a tape cartridge when the green light is flashing or when it is off; this damages the tape and might damage the drive.

The green light glows when the drive is empty. It also glows when the drive is inactive and positioned at the beginning of a tape. The only time you can remove a tape is when the green light is glowing.

Console Subsystem

1.6 Console Tape Cartridge Drive

- The red Load/Unload button controls the loading of the tape. When the button is pressed in, it is in the Load position. The red light on the button glows red when the tape is loaded. It flashes *slowly* when the tape is rewinding. It flashes *quickly* when there is a tape error (for some reason the tape could not be read). To clear a tape error, press the button four times.

Caution

Never attempt to remove a tape cartridge if the Load/Unload button is in the Load position (the red light is on); this damages the tape and might damage the drive.

When the Load/Unload button is released, it is in the Unload position. The only time you can remove a tape is when this button is in the Unload position (the red light is off).

- The cartridge release handle is located next to the tape access slot. This handle controls the position of the tape drive spindle. Pull the handle open to insert or remove a tape cartridge.

Caution

Pull the cartridge release handle open *only* when all three of the following are true:

- The green light is glowing.
- The Load/Unload button is in the Unload position.
- The red light on the Load/Unload button is off.

Otherwise, you might damage both the tape and the drive.

Table 1–4 lists the functions of the Load/Unload button and the cartridge release handle on the tape cartridge drive.

Table 1–4 Summary of Tape Cartridge Drive Controls

Control	Position	Function
Load/Unload button	In	Loads the tape (15 seconds to 3 1/2 minutes)
	Out	Rewinds and unloads the tape
Cartridge release handle	Open	Lets you insert or remove a tape after rewind and unload operations are completed
	Closed	Locks tape in operating position

Console Subsystem 1.6 Console Tape Cartridge Drive

Table 1–5 lists the conditions indicated by the green and red indicator lights on the tape cartridge drive.

Table 1–5 Tape Cartridge Drive Indicator Lights

Red Light	Green Light	Condition
Off	Off	No power to the tape cartridge drive.
Off	On	Safe to move the handle. Power is present.
On	Off	Do not move the handle. One of the following is in effect: <ul style="list-style-type: none">• Power-on self-test is occurring.• Tape cartridge is inserted but handle is still in the open position.• Tape is loading or unloading.• Tape is stopped.
On	On	Tape loaded successfully.
On	Flashes	Tape is in motion (except rewind). Read/write commands are being processed. Irregular fast flashes mean tape calibration is occurring.
Flashes	Flashes	Tape is rewinding.
Rapid flashes	Off	A fault is occurring. Press and release the Load/Unload button four times. If the problem persists, do not attempt to remove the tape cartridge. Call Digital Customer Services.

1.6.1 Tape Cartridges

Follow these guidelines when using tape cartridges:

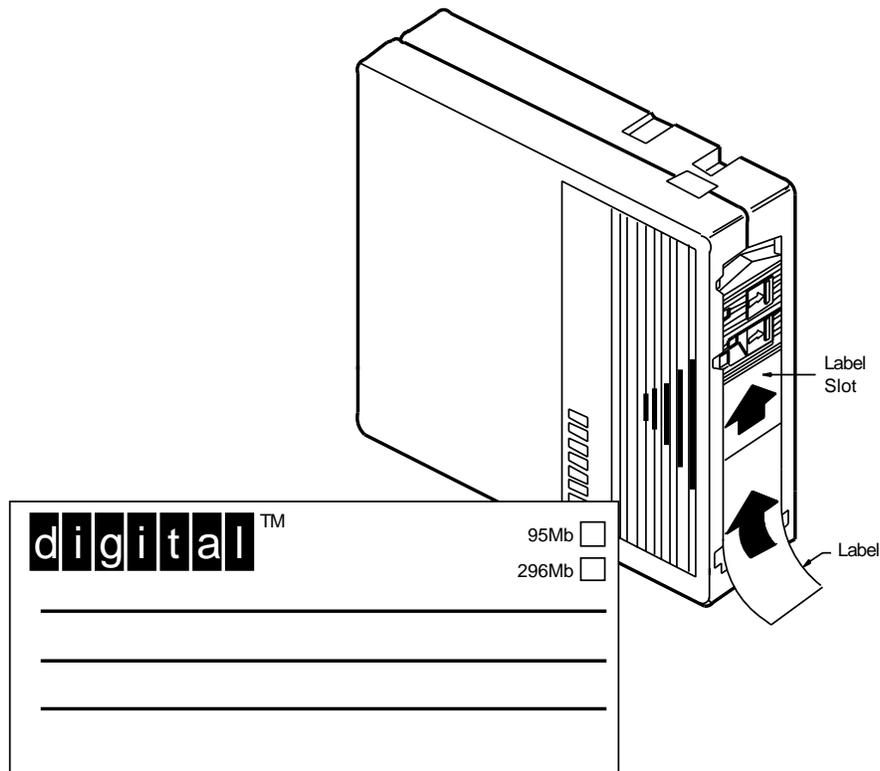
- Tape cartridges come in clear plastic protective cases. You should keep tape cartridges in these cases when you are not using them.
- The label slot holds the label that provides information about the contents of the tape cartridge. Label a tape cartridge if you will copy files to it (distribution tape cartridges are already labeled).

To label a tape cartridge, insert a slide-in label into the slot located on the front of the tape cartridge. Figure 1–3 shows how to insert a label on a tape cartridge.

Console Subsystem

1.6 Console Tape Cartridge Drive

Figure 1-3 Inserting a Label on a Tape Cartridge



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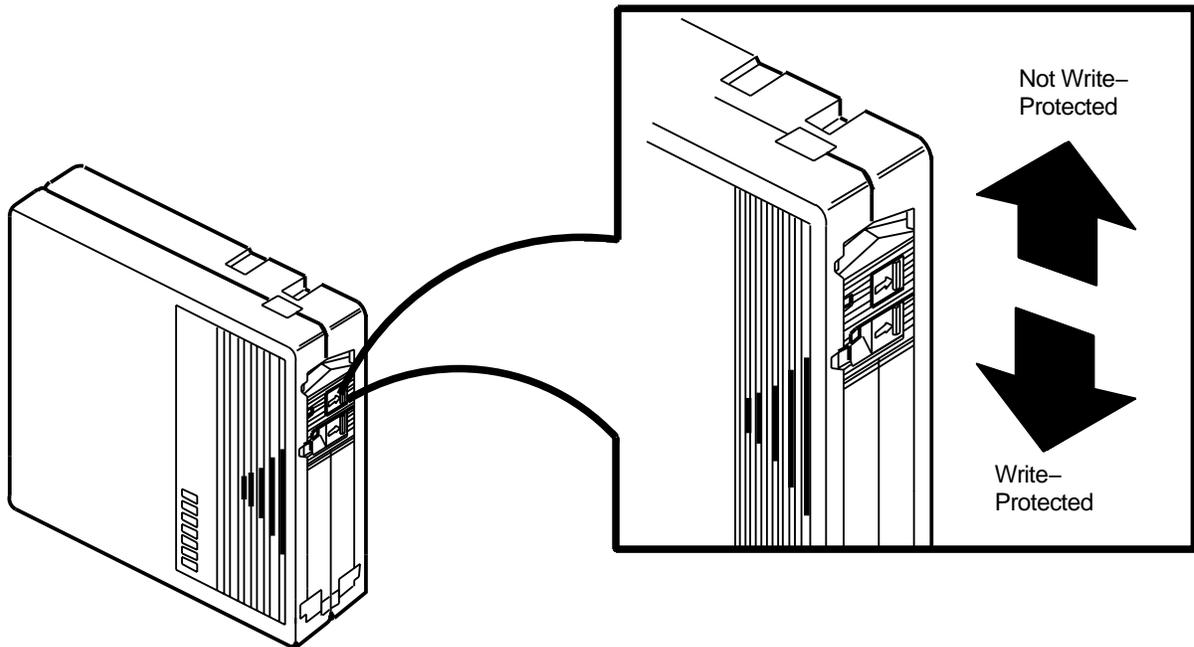
Caution

Use only the label slot provided to label a tape cartridge. Applying adhesive labels or writing on the tape cartridge can damage it.

- The write-protect switch is a movable switch on the tape cartridge that controls whether you can write to the tape. To write-protect a tape cartridge, slide the write-protect switch toward the label slot. An orange rectangle is visible when the tape cartridge is write-protected.

Always write-protect the distribution tape cartridge before an installation. Figure 1-4 shows how to write-protect a tape cartridge.

Figure 1-4 Positioning the Write-Protect Switch



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1.6.2 Inserting a Tape Cartridge

To insert a tape cartridge into the drive, do the following:

1. Make sure the tape cartridge drive is empty. If a tape cartridge is already in the drive, enter the following command and press the Return key:

```
PS-HW-0> SHOW DEVICE MUA0
```

If the display indicates that the device status of the tape cartridge is MOUNTED, enter the following command and press Return:

```
PS-HW-0> DISMOUNT MUA0
```

Then follow the directions for removing a tape cartridge in Section 1.6.3.

2. Press the Load/Unload button so that it is in the Unload position. The green light is glowing steadily and the red light is off.
3. Pull open the cartridge release handle.

Caution

Never pull open the cartridge release handle unless the green light is glowing, the red light is off, and the Load/Unload button is in the Unload position; you might damage the drive.

4. Remove the tape cartridge from its plastic case. You should write-protect a tape cartridge containing software that you will install on your system. You should write-enable a tape cartridge if you are going to either copy or back up files to it.

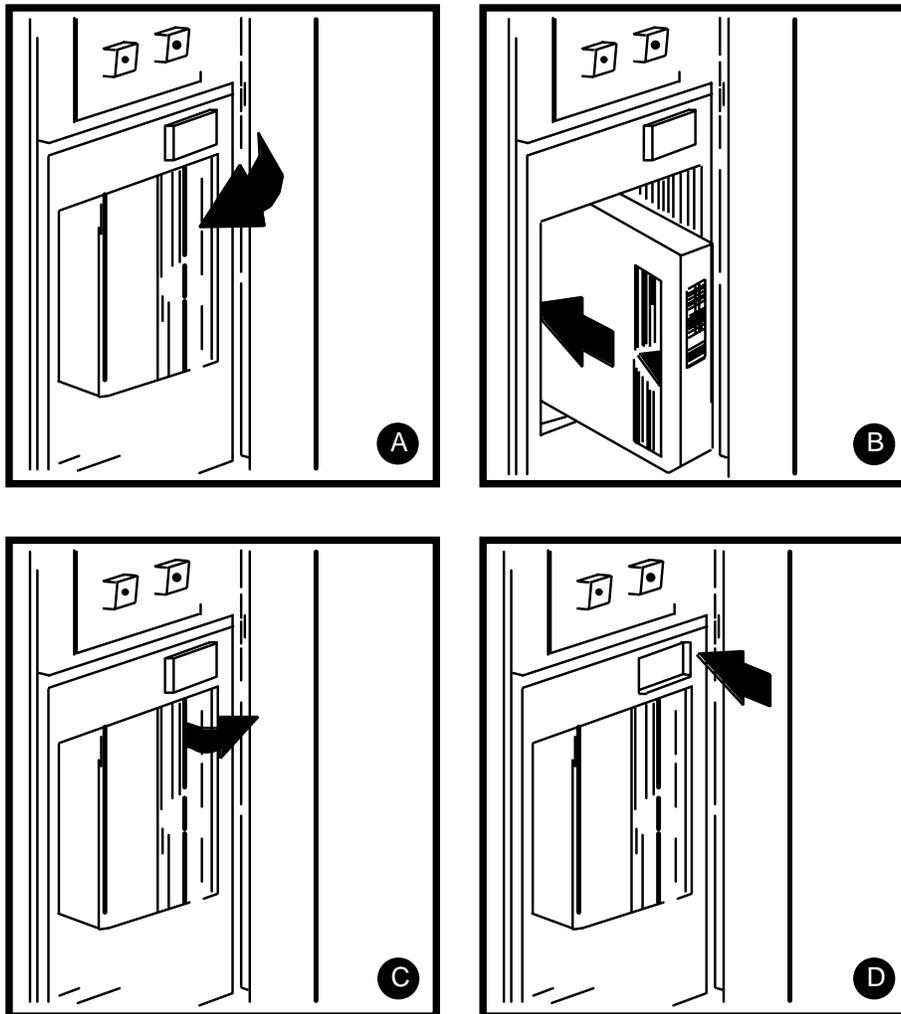
Console Subsystem

1.6 Console Tape Cartridge Drive

5. Hold the tape cartridge with the label facing you and the large arrow on the top of the tape cartridge pointing into the drive. Insert the tape cartridge into the drive. Push the tape cartridge into the drive until it locks into place. The green light turns off and the red light glows.
6. Push the handle closed until it locks into place. The red light turns off and the green light glows.
7. Press the Load/Unload button so that it is in the Load position. The red light glows. The tape cartridge goes through a load process that takes between 10 and 15 seconds. During this time the green light flashes. When the tape is ready, the green light glows.

Figure 1-5 illustrates the procedure.

Figure 1-5 Inserting a Tape Cartridge



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1.6.3 Removing a Tape Cartridge

To remove a tape cartridge from the drive, do the following:

1. Press the Load/Unload button so that it is in the Unload position. If the tape is not rewound, the red and green lights flash slowly as the tape rewinds. When the tape is completely unloaded, the red light turns off and the green light is glowing.
2. Pull open the cartridge release handle. The tape cartridge partially ejects.

Caution

Never pull open the cartridge release handle unless the green light is glowing, the red light is off, and the Load/Unload button is in the Unload position; you might damage the drive.

3. Remove the tape cartridge and put it into its plastic case.
4. Push the handle closed until it locks firmly into place.

Preparing for a VMS Installation

Before you can install the VMS operating system on VAX 8820, 8830, and 8840 computers you must perform the following tasks:

- Turn on the system
- Install standalone BACKUP on the console fixed disk

This chapter describes these tasks.

Note

The console prompts in the examples in this chapter display CPU 0 as the current CPU.

2.1 Turning On the System

The following steps describe turning on the MicroVAX console and the VAX 8820, 8830, and 8840 computers.

1. Before you turn on power to the MicroVAX console, check the following controls on the back (for more information, see the *Console User's Guide*):
 - Set the halt/enable switch to the disable (left) position.
 - Set the mode switch to the right position so you do *not* get a language inquiry question. (If you want to change the language, leave this switch in the middle position so you can select a language in response to a query.)
 - Set the baud rate for the console terminal to 9600.
2. Press the power switch on the front of the MicroVAX pedestal to turn on the console. (See Figure 1-1 for the location of the power switch.) When you turn on the console, it automatically boots and starts the console software.

The console terminal displays a message similar to the following:

```
VAX-88xx
Copyright 1988 Digital Equipment Corporation
POLARIS - VAX 88XX Console Program - Version 1.0
Tuesday 19-JUN-1990 09:48:15.52 OPA0
  VAX 88XX Console EMM Subprocess - Version 1.0
  VAX 88XX Console Printer Subprocess - Version 1.0
PS-OFF>
```

If you do not see this message, see the *Console User's Guide* for information on booting the console.

Preparing for a VMS Installation

2.1 Turning On the System

The PS_OFF> prompt tells you that the power to the VAX 8820, 8830, or 8840 computer is off.

3. Turn on power to the VAX 8820, 8830, or 8840 computer by entering the following command:

```
PS_OFF> POWER ON
```

The terminal displays the following message:

```
System Power is applied to Processor Logic Modules
System Power has been sequenced to on
Tuesday 19-JUN-1990 09:55:07.5
PS-HW-0>
```

The PS-HW-0> prompt tells you the power is on. The console is now ready to accept the console commands described in Section 1.3.

4. Proceed to Section 2.2 to install standalone BACKUP on the console fixed disk.

2.2 Installing Standalone BACKUP on the Console Fixed Disk

You need to install standalone BACKUP on the console fixed disk before you can install the VMS operating system. Use the tape cartridge labeled VMS V5.4 CONSOL TK50 SABKP.BCK FOR 8820/30/40, which is included in the VMS distribution kit.

To install standalone BACKUP from the tape cartridge, use the following procedure.

Note

This procedure assumes that the console subsystem is running and the PS-HW-0> prompt is displayed (power to the system is turned on, but the microcode is not loaded and the system is not initialized). For more information, see the *Console User's Guide*.

1. Make sure that both the Write Protect and the Ready buttons for the console fixed disk are released (in the out position).
2. Check the console tape cartridge drive. If it is empty, go to step 3. If there is another tape cartridge in the drive, enter the following command and press the Return key:

```
PS-HW-0> SHOW DEVICE MUA0
```

If the display indicates that the device status of the tape cartridge is MOUNTED, enter the following command and press Return:

```
PS-HW-0> DISMOUNT MUA0
```
3. Make sure that the Load/Unload button is in the Unload (out) position. When the green light glows steadily and the red light is off, pull open the cartridge release handle.
If there is another tape cartridge in the drive, remove it.

Preparing for a VMS Installation

2.2 Installing Standalone BACKUP on the Console Fixed Disk

4. Take the tape cartridge labeled VMS V5.4 CONSOL TK50 SABKP.BCK FOR 8820/30/40 from its clear plastic case. Make sure it is write-protected (the write-protect switch is positioned to the left and the orange rectangle is visible).
5. Insert the tape cartridge into the drive. The green light turns off and the red light glows.
6. Push the handle closed. The green light glows and the red light turns off. Push the Load/Unload button in. When the tape is ready, both the green and red lights glow.
7. Enter the following command and press Return:

```
PS-HW-0> SPAWN
```

8. At the PCON-SPAWN> prompt, enter the following command and press Return:

```
PCON-SPAWN> MOUNT/FOREIGN MUA0
```

9. To transfer the standalone BACKUP files to the console fixed disk, enter the following command and press Return:

```
PCON-SPAWN> BACKUP/VERIFY MUA0:SABKP.BCK/SAVE_SET/REWIND DUA0:[*...]/NEW_VERSION
```

The procedure transfers standalone BACKUP to the console fixed disk. This takes approximately 5 minutes. During the process the green light on the tape cartridge drive flashes. The procedure displays the following message:

```
%BACKUP-I-STARTVERIFY, starting verification pass
```

This message indicates that standalone BACKUP has been transferred to the console fixed disk and the files are being checked for errors. Approximately 5 minutes later, the procedure finishes and the PCON-SPAWN> prompt is displayed, as follows:

```
PCON-SPAWN>
```

10. Enter the following command and press Return:

```
PCON-SPAWN> DISMOUNT/UNLOAD MUA0
```

The red and green lights flash slowly as the tape rewinds. When the tape is completely unloaded, the red light turns off and the green light glows.

11. Release the Load/Unload button so that it is in the Unload (out) position. Pull the handle open and remove the tape cartridge. Push the handle closed.
12. Put the tape cartridge into its plastic case and store it in a safe place.
13. Enter the following command and press Return:

```
PCON-SPAWN> LOGOUT
```

14. Enter the following command and press Return:

```
PS-HW-0> @SYSINIT
```

Informational messages are displayed. When SYSINIT finishes, the PS-CIO-0> prompt is displayed, as follows:

```
PS-CIO-0>
```

15. To edit the boot command procedures, go to Section 3.1.2.

Installing the VMS Operating System

The *Upgrade and Installation Manual* is your primary source of information on installing the VMS operating system. Start any VMS installation or upgrade by following the instructions in the *Upgrade and Installation Manual*.

Refer to this chapter for installation information specific to the VAX 8820, 8830, and 8840 computers such as the following:

- Determining device names
- Editing boot command procedures
- Booting standalone BACKUP
- Booting the new system disk

Note

The screen displays and examples in this manual depict the installation of VMS Version 5.4. Your screen displays reflect the version that you are installing.

If you are installing the VMS operating system on a VAX computer that is part of a VAXcluster environment, read the *VMScluster Systems for OpenVMS*.

3.1 Before Installing the VMS Operating System

Before beginning the VMS installation, you must determine the names of the devices you will use and edit some boot command procedures.

The following sections describe these tasks.

3.1.1 Determining Device Names

At different times during the installation, you need to tell the system which drive contains the distribution medium and which drive contains the system disk. You refer to a drive with its **device name**. Before you begin an installation, determine the device names of the drives you will be using.

A device name has the following format:

ddcu

This format uses the following values:

- *dd* is the *device code*. The device code tells what type of drive you are using.
- *c* is the *controller designation*. A controller designation can be one of the alphabetic letters A through Z. The controller designation, along with the unit number, identifies the location of the drive.

Installing the VMS Operating System

3.1 Before Installing the VMS Operating System

- *u* is the *unit number*. A unit number can be a decimal number in the range of 0 to *n*.¹ The unit number, along with the controller designation, identifies the location of the drive.

For example, CSA3 is the device name for the console fixed disk drive. *CS* is the device code. *A* names the controller (the controller provides the interface between the processor and the drive). *3* is the unit number.

Note

The only part of the name you can readily modify is the unit number. The device code is fixed and the controller designation is assigned when the hardware is installed.

If a drive is connected to a hierarchical storage controller (HSC) device, precede the device name with the name of the HSC and a dollar sign (\$). For example:

TROUT\$DJA0

In this example, TROUT is the name of the HSC device and DJA0 is the device name for an RA60 drive that is connected to it.

Table 3–1 lists the device names for the different drives that can be part of a VAX 8820, 8830, or 8840 computer system.

Table 3–1 Device Names for the VAX 8820, 8830, and 8840 Computers

Device	Device Name ¹
Console fixed disk	CSA3
RA60 disk drive	DJcu
RA70, RA80, RA81, and RA82 disk drives	DUcu
TU80 magnetic tape drive	MScu
TA78, TU81, and TU81-plus magnetic tape drives	MUcu

¹*c* stands for the controller designation, and *u* stands for the unit number.

Before editing the boot command procedure you will use, you must decide which drive will hold your system disk. You can use any of the disk drives (except the console drive) for your system disk.

3.1.2 Editing Boot Command Procedures

During the installation procedure, you are asked to boot the system. When you boot the system, a boot command procedure executes the instructions to deposit values in the processor registers, load the VMS operating system into memory, and start the CPUs.

¹ The first drive on a controller is usually assigned a unit number of 0, the next drive is assigned a unit number of 1, and so on. The range is determined by the bus that supports the drive.

Installing the VMS Operating System

3.1 Before Installing the VMS Operating System

The instructions for booting the system are slightly different for each type of controller. Therefore, a boot command procedure exists for each type of controller that the computer supports. Table 3–2 lists the boot command procedures you might need. All the boot command procedures are stored on the console fixed disk in the [PSTAR] directory.

Table 3–2 Boot Command Procedures

Procedure	Use
BCIBOO.CMD	Used to boot from an HSC disk on a CIBCI or CIBCA controller.
BDABOO.CMD	Used to boot from a disk attached to a KDB50 disk controller.
DEFBOO.CMD	Default boot command procedure. See Section 3.1.3.

Before you can use these boot command procedures, you must edit certain lines. Some of the lines contain DEPOSIT commands that put the value 0 in registers 1 through 5. You must edit these lines so that the DEPOSIT commands put the correct values for your system in the registers.

Note

Before editing a boot command procedure, make a copy of it. Use the COPY command in the following format:

```
PS-CIO-0> COPY filename.CMD filename.SAV
```

In this example, *filename* is the file name of the boot command procedure. For example, to make a copy of BCIBOO.CMD, enter the following command and press the Return key:

```
PS-CIO-0> COPY BCIBOO.CMD BCIBOO.SAV
```

Edit the boot command procedure that corresponds to the controller type for your system disk. For example, if your system disk is attached to a CIBCI or CIBCA controller, edit BCIBOO.CMD. After you decide which boot command procedure you need to edit, check Table 3–3 or Table 3–4 to find the correct values for your system.

To edit a boot command procedure, follow these steps:

1. After you have copied the boot command procedure, edit the original. Enter the EDIT command in the following format:

```
PS-CIO-0> EDIT filename.CMD
```

For example, to edit BCIBOO.CMD, enter the following command and press Return:

```
PS-CIO-0> EDIT BCIBOO.CMD
```

Note

The EDIT command starts the EDT editor. If you need more information on using the EDT editor, press the PF2 key for online help or see the *OpenVMS User's Manual*.

Installing the VMS Operating System

3.1 Before Installing the VMS Operating System

2. Change the DEPOSIT commands for register 1 (R1) and register 2 (R2). Use the values shown in Table 3-3 or Table 3-4.
3. Delete the exclamation points (!) that precede the DEPOSIT commands for R1 and R2.
4. You can change the DEPOSIT commands for register 3 (R3) and register 5 (R5) if you want to. However, values that are entered for R3 and R5 as part of the BOOT command will override the values in the boot command procedure.
5. When you have finished editing the boot command procedure, press Ctrl/Z. At the asterisk (*) prompt, enter the EXIT command and press Return:

* EXIT

The modified version of the boot command procedure is saved, and the PS-CIO-0> prompt is displayed.

6. Proceed to Section 3.1.3 to edit DEFBOO.CMD.

Note

If you change the system configuration in the future, use the previous procedure to modify the boot command procedures.

Table 3-3 and Table 3-4 show the correct values for your system.

Table 3-3 Values to Deposit in R1-R5: BCIBOO.CMD

Register Number	Bit Position	Possible Values	Meaning
R1	<31:07>	Must be 0	No meaning.
	<06:04>	0-5 (hex)	The VAXBI that has the CIBCI or CIBCA that accesses the system disk. The VAX 8820, 8830, and 8840 computers support a maximum of six VAXBIs.
	<03:00>	0-F (hex)	The VAXBI node number of the CIBCI or CIBCA adapter.
R2	<31:16>	Must be 0	No meaning.
	<15:08>	0-F (hex)	Node number of the second HSC if the boot device is dual ported. If one of the HSCs is node 0, that node must be specified as the lowest byte. For example, 0100 means boot from either HSC 0 or 1, while 0001 means boot from HSC 1 only.
R3 ¹	<07:00>	0-F (hex)	Node number of the first HSC.
	<31:00>		Unit number of the drive that holds the system disk (expressed in decimal).

¹Note that if you install volume shadowing, you must deposit special values in R3. For information, see the *Console User's Guide* and the *Volume Shadowing for OpenVMS*.

(continued on next page)

Installing the VMS Operating System

3.1 Before Installing the VMS Operating System

Table 3–3 (Cont.) Values to Deposit in R1–R5: BCIBOO.CMD

Register Number	Bit Position	Possible Values	Meaning
R4	<31:00>		If Bit 3 is set in R5, deposit the hexadecimal value of the logical block number of the secondary boot block into R4.
R5	<31:00>		See the <i>Console User's Guide</i> for information about the boot control flags that can be set in R5.

Table 3–4 Values to Deposit in R1–R5: BDABOO.CMD

Register Number	Bit Position	Possible Values	Meaning
R1	<31:07>	Must be 0	No meaning.
	<06:04>	0–5 (hex)	The VAXBI that has the CIBCI or CIBCA that accesses the system disk. The VAX 8820, 8830, and 8840 computers support a maximum of six VAXBIs.
	<03:00>	0–F (hex)	The VAXBI node number of the CIBCI or CIBCA adapter.
R2	<31:00>	Must be 0	No meaning.
R3 ¹	<31:00>		Unit number of the drive that holds the system disk (expressed in decimal).
R4	<31:00>		If Bit 3 is set in R5, deposit the hexadecimal value of the logical block number of the secondary boot block into R4.
R5	<31:00>		See the <i>Console User's Guide</i> for information about the boot control flags that can be set in R5.

¹Note that if you install volume shadowing, you must deposit special values in R3. For information, see the *Console User's Guide* and the *Volume Shadowing for OpenVMS*.

3.1.3 Editing DEFBOO.CMD

The default boot command procedure, DEFBOO.CMD, consists of a single BOOT command. DEFBOO.CMD is executed under the following circumstances:

- When you enter the BOOT command without specifying a boot name
- When you enable AUTO BOOT, and the system reboots automatically after a power failure or error halt

Note

Before editing DEFBOO.CMD, make a copy of it. Enter the following command and press the Return key:

```
PS-CIO-0> COPY DEFBOO.CMD DEFBOO.SAV
```

Installing the VMS Operating System

3.1 Before Installing the VMS Operating System

Edit DEFBOO.CMD so that it refers to the boot command procedure you modified in Section 3.1.2. Follow these steps:

1. After you have copied DEFBOO.CMD, edit the original. Enter the following command and press Return:

```
PS-CIO-0> EDIT DEFBOO.CMD
```

The contents of DEFBOO.CMD are displayed. For example:

```
!DEFBOO.CMD
.
.
.
BOOT dddnnn/R5=##
```

Note

The EDIT command starts the EDT editor. If you need more information on using the EDT editor, press the PF2 key for online help or see the *OpenVMS User's Manual*.

2. Edit the line that contains the BOOT command. Substitute BCI or BDA for *ddd*. Substitute the unit number of the drive that will hold the system disk for *nnn*.

For example, suppose the system disk is on a CIBCI controller and it has a unit number of 2. Change the BOOT command in DEFBOO.CMD as follows:

```
BOOT BCI2
```

If you have a VAXcluster environment, specify the correct root directory to boot from. For example, if you want to boot from [SYS3], enter the following:

```
BOOT BCI2 /R5=30000000
```

3. When you have finished editing DEFBOO.CMD, press Ctrl/Z. At the asterisk (*) prompt, enter the EXIT command and press Return:

```
* EXIT
```

The modified version of DEFBOO.CMD is saved, and the PS-CIO-0> prompt is displayed.

Note

If you change the system configuration in the future, use the previous procedure to modify DEFBOO.CMD.

4. Return to the *Upgrade and Installation Manual* to continue with the installation.

3.2 Booting Standalone BACKUP

This section describes the steps for booting standalone BACKUP. Standalone BACKUP lets you transfer the VMS *required* save set from the distribution magnetic tape to your system disk.

In Section 2.2, you were instructed to put standalone BACKUP on the console disk before installing the VMS operating system. Make sure you have completed that task before continuing. After you have moved standalone BACKUP to the fixed disk, perform the following steps to boot standalone BACKUP:

1. Make sure that the console subsystem is running and the PS-CIO-0> prompt is displayed.
2. To enable automatic reboot, enter the following command and press the Return key:¹

```
PS-CIO-0> ENABLE AUTO REBOOT
```

3. To boot standalone BACKUP, enter the following command and press Return:

```
PS-CIO-0> @CSAB00
```

4. The procedure asks you for the date and time. Enter the date and time using the 24-hour clock format and press Return. For example:

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-JUN-1990 15:00  
VAX/VMS Version V5.4 Major version = 1 Minor version id = 0
```

5. After approximately 1 minute, the terminal displays a list of the local devices on your system and, if you have them, HSC- and MSCP-served devices. For example:

```
Available device DJA3:    device type RA60  
Available device DJA2:    device type RA60  
.  
.  
.
```

Check the list of devices. If the list is incomplete, make sure that all the drives are properly connected to the system. See your hardware manuals for details.

6. When standalone BACKUP finishes booting, it displays an identification message followed by the dollar sign prompt (\$):

```
%BACKUP-I-IDENT, standalone BACKUP V5.4; the date is 19-JUN-1990 15:00  
$
```

7. Return to the *Upgrade and Installation Manual* to continue with the installation.

¹ For the system to reboot automatically, you must enter the ENABLE AUTO REBOOT command and edit the boot command procedures as described in Section 3.1.2 and Section 3.1.3.

Installing the VMS Operating System

3.3 Booting the New System Disk

3.3 Booting the New System Disk

As a result of the BACKUP command you enter to start the installation, the *required* save set on the distribution kit is transferred to the system disk. During the process, the procedure displays the following message:

```
% BACKUP-I-STARTVERIFY, starting verification pass
```

This message indicates that the required save set has been transferred to the system disk and the files are being checked for errors. Approximately 5 minutes later, the procedure displays the following message:

```
%BACKUP-I-PROCDONE, operation completed. Processing finished at 19-JUN-1990 15:00  
If you do not want to perform another standalone BACKUP operation, use the  
console to halt the system.
```

If you do want to perform another standalone BACKUP operation, ensure the standalone application volume is online and ready. Enter "YES" to continue:

To continue the installation, halt the system and boot the system disk as follows:

1. Press Ctrl/P to return control to the console.
2. Enter the following command and press the Return key:

```
PS-OS-0> HALT
```

3. To boot the system disk, use the BOOT command in the following format:

```
PS-CIO-0> B dddn
```

Substitute BCI or BDA for *ddd*. Substitute the unit number of the target drive for *n*.

For example, suppose your system disk is on a BDA-controlled drive and the unit number is 6. Enter the following command and press Return:

```
PS-CIO-0> B BDA6
```

4. When the boot is complete, the procedure displays a message and asks you for the date and time.

Note

If the system does not boot, a hardware or software problem might exist. Refer to Section 4.1.7 for a description of the symptoms of hardware and software problems and actions you can take to correct these problems.

5. Return to the *Upgrade and Installation Manual* to continue with the installation.

Startup and Shutdown Procedures

During a VMS installation or upgrade, your system will shut down and reboot several times. Although the installation and upgrade procedures usually perform these tasks automatically, you might need to manually shut down or reboot your system. Also, you will occasionally need to reboot the system during normal operation. This chapter describes different ways of booting and shutting down the system.

Before you can use the information in this chapter, you must edit the boot command procedures (see Section 3.1.2) and DEFBOO.COMD (see Section 3.1.3).

Additional information on using console commands to start up and shut down the system is provided in the *Console User's Guide*.

4.1 Booting the System

Booting is the process of loading system software into memory. The VAX 8820, 8830, and 8840 computers use boot command procedures to boot the VMS operating system from the system disk into memory. A boot command procedure does the following:

- Sets up the system environment
- Deposits values in registers
- Tells the system what type of controller the system disk is on and the unit number of the drive
- Loads the VMS operating system into memory
- Starts the CPU

The instructions for booting the system vary slightly for each type of controller. There is a boot command procedure for each type of controller that the system supports.

For example, the boot command procedure BCIBOO.COMD lets you boot from disk drives connected to a CIBCI or CIBCA controller. All boot command procedures are stored on the console fixed disk (CSA3).

The boot process consists of the following steps:

1. You enter the BOOT command. The specified boot command procedure deposits information into the general-purpose registers.
2. VMB.EXE, the primary boot program, is loaded into memory. VMB.EXE locates SYS\$SYSTEM:SYSBOOT.EXE on the system disk and loads it into memory.

Startup and Shutdown Procedures

4.1 Booting the System

3. SYSBOOT.EXE loads the SYSGEN parameters stored in SYS\$\$SYSTEM:VAXVMSSYS.PAR and checks the conversational boot flag. If the flag is set, the procedure stops and displays the SYSBOOT> prompt. If the flag is not set, SYSBOOT.EXE loads the VMS executive into memory and transfers control to the VMS executive.
4. When the VMS executive finishes, it executes the SWAPPER process.
5. The SWAPPER creates the SYSINIT process.
6. SYSINIT creates the STARTUP process.
7. STARTUP executes SYS\$\$SYSTEM:STARTUP.COM (unless you indicated another file at the SYSBOOT> prompt) and SYSTARTUP_V5.COM. The current values of the SYSGEN parameters are written back to VAXVMSSYS.PAR.
8. The boot process finishes and you can log in to the VMS operating system.

By setting certain SYSGEN parameters, you can control how many CPUs are activated at boot time and the characteristics of a multiprocessing system. In a multiprocessing system, the primary CPU is always booted. By default, all available CPUs are also booted. If you want to change this, you can set the SYSGEN parameter SMP_CPUS to tell the system which secondary CPUs to boot. For information on SYSGEN parameters that affect multiprocessing, see the *OpenVMS System Management Utilities Reference Manual*.

4.1.1 Booting with DEFBOO.COM

The most direct way to boot the system is to enter the BOOT command and press the Return key. By default, the console uses DEFBOO.COM to boot the system. DEFBOO.COM is the boot command procedure that you edited in Section 3.1.3.

To boot the system with DEFBOO.COM, use the following procedure:

1. If the VMS operating system is not running, go to step 2.
If the VMS operating system is running, log in to the SYSTEM account.
Enter the following command and press Return:

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

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press Return for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```
2. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press Return:

```
PS-OS-0> HALT/CPU=ALL
```
3. At the PS-CIO-0> prompt, enter the following command and press Return:

```
PS-CIO-0> B
```

4.1.2 Booting from Another System Disk

To boot the system from a system disk other than the one specified in DEFBOO.COMD, use the following procedure:

1. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press the Return key:

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

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press Return for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

2. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press Return:

```
PS-OS-0> HALT/CPU=ALL
```

3. At the PS-CIO-0> prompt, enter the BOOT command in the following format:

```
PS-CIO-0> B dddn
```

Substitute BCI or BDA for *ddd*. Substitute the unit number of the drive holding the system disk for *n*.

For example, suppose the system disk is on a CIBCI-controlled drive and the unit number is 6. Enter the following command and press Return:

```
PS-CIO-0> B BCI6
```

4.1.3 Conversational Boot

A conversational boot is most commonly used in research and development environments for experimentation and during software upgrades. Perform a conversational boot when you want 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 certain SYSGEN commands to do the following:

- Look at 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 way:

1. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press the Return key:

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

Startup and Shutdown Procedures

4.1 Booting the System

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press Return for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

2. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press Return:

```
PS-OS-0> HALT/CPU=ALL
```

3. At the PS-CIO-0> prompt, enter the following command and press Return:

```
PS-CIO-0> B/R5=1
```

This command uses DEFBOO.COMD and deposits 1 in register 5 (R5). When R5 contains 1, the boot process stops at the SYSBOOT> prompt.

If you want to boot from a drive other than the one specified in DEFBOO.COMD, enter the BOOT command in the following format:

```
PS-CIO-0> B dddn /R5=1
```

Substitute BCI or BDA for *ddd*. Substitute the unit number of the drive holding the system disk for *n*. The /R5=1 qualifier deposits 1 in register 5 (R5).

For example, suppose the system disk is on a CIBCI-controlled drive and the unit number is 2. Enter the following command and press Return:

```
PS-CIO-0> B BCI2 /R5=1
```

This command tells the console to boot with BCIBOO.COMD, deposit 2 in register 3 (R3), and deposit 1 in register 5 (R5).

4. At the SYSBOOT> prompt, you can enter any of the SYSGEN commands listed in Table 4-1. For more information about these SYSGEN commands, see the *OpenVMS System Management Utilities Reference Manual*.

Table 4-1 SYSGEN Commands Used in SYSBOOT

Command	Description
CONTINUE	Resumes the boot process.
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.

(continued on next page)

Startup and Shutdown Procedures

4.1 Booting the System

Table 4–1 (Cont.) SYSGEN Commands Used in SYSBOOT

Command	Description
SHOW parameter-name	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).

5. When you finish using the SYSGEN commands, enter the CONTINUE command to complete the boot process.

The following examples illustrate some operations you can perform during a conversational boot.

- You can enter the following commands to set the SYSGEN parameter WSMAX to 512 and complete the boot process:

```
SYSBOOT> SET WSMAX 512
SYSBOOT> CONTINUE
```

When the VMS operating system displays the following message, the new SYSGEN parameter value becomes active:

```
SYSTEM  job terminated at 19-JUN-1990 15:00:00.00
```

- If you modified the system parameters to values that render the system unbootable, enter the following commands to boot using default values:

```
SYSBOOT> USE DEFAULT
SYSBOOT> CONTINUE
```

- You also can use a conversational boot to specify a minimum startup. For example, if you want to boot the system and avoid autoconfiguring all your peripheral devices, enter the following command:

```
SYSBOOT> SET STARTUP_P1 "MIN"
```

This command initiates a minimum startup that performs the following sequence of operations:

1. Starts the processes that control error logging, the job controller, and the operator's log
2. Installs known images
3. Defines the number of interactive users as 8
4. Logs off

Because this procedure does not call SYSTARTUP_V5.COM, it does not automatically configure the system's peripheral devices.

The value of STARTUP_P1 is saved and affects future boot operations. After the operating system boots, you can run SYSGEN to reset STARTUP_P1. For example, enter the following commands to reset STARTUP_P1 to its default value (null):

Startup and Shutdown Procedures

4.1 Booting the System

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE CURRENT
SYSGEN> SET STARTUP_P1 ""
SYSGEN> WRITE CURRENT
SYSGEN> EXIT
$
```

4.1.4 Booting from a Different Directory on the System Disk

The VMS operating system is installed on the system disk in the root directory named [SYS0]. You can use VMSKITBLD, described in the *OpenVMS System Manager's Manual*, to put a copy of the VMS operating system into another root directory on the system disk.

To boot the system from a directory other than [SYS0], use the following procedure:

1. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press the Return key:

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

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press Return for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

2. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press Return:

```
PS-OS-0> HALT/CPU=ALL
```

3. At the PS-CIO-0> prompt, enter the BOOT command in the following format:

```
PS-CIO-0> B dddn /R5=root_directory
```

Substitute BCI or BDA for *ddd*. Substitute the unit number of the drive holding the system disk for *n*. Use *root_directory* to identify the root from which you want to boot.

For example, suppose the system disk is on a CIBCI-controlled drive, the unit number is 6, and you want to boot from [SYS3]. Enter the following command and press Return:

```
PS-CIO-0> B BCI6 /R5=30000000
```

4.1.5 Booting from [SYSF] During an Upgrade

During the upgrade procedure, you will be instructed to boot the system from the [SYSF] directory.

To boot the system from the [SYSF] directory, use the following procedure:

1. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press the Return key:

```
PS-OS-0> HALT/CPU=ALL
```

2. At the PS-CIO-0> prompt, enter the BOOT command in the following format:

```
PS-CIO-0> B dddn /R5=root_directory
```

Startup and Shutdown Procedures

4.1 Booting the System

Substitute BCI or BDA for *ddd*. Substitute the unit number of the drive holding the system disk for *n*. Use *root_directory* to identify the root from which you want to boot.

For example, suppose the system disk is on a CIBCI-controlled drive and the unit number is 6. To boot from the root directory [SYSF], enter the following command and press Return:

```
PS-CIO-0> B BCI6 /R5=f0000000
```

4.1.6 Booting with XDELTA

XDELTA is a debugging tool that system programmers use. To use XDELTA, you need to boot the system in a special way. For information on booting with XDELTA, see the *OpenVMS Delta/XDelta Debugger Manual*. Follow the instructions for booting a VAX 8800.

4.1.7 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. Examples of hardware problems are a read error on a disk drive, or a machine check error. If you suspect a hardware problem, do the following:

1. Consult the hardware manual for your VAX computer.
2. Contact the appropriate Digital Customer Services representative.

When the operating system is loaded into memory, a message similar to the following appears on the terminal screen:

```
SYSTEM          job terminated at 19-JUN-1990 15:00:00.00
```

If the system does not display this message, a software problem has probably occurred. To correct the situation, do the following:

1. Try to boot the system again.
2. Place a backup copy of the system disk into another drive and try to boot from it.

4.2 Shutting Down the System

Before you shut down the VMS operating system, decide if you want the VMS operating system to reboot automatically or if you want to enter console commands after the shutdown completes.

If you want the VMS operating system to reboot automatically, you must have entered the ENABLE AUTO REBOOT command when you last were in console mode. If you want to enter console commands, stop the system after the shutdown completes.

You can perform the following three types of shutdowns:

- Orderly shutdown with SHUTDOWN.COM. This procedure shuts down the system after performing maintenance functions.
- Emergency shutdown with OPCCRASH.EXE. Use this procedure if you cannot perform an orderly shutdown with SHUTDOWN.COM.
- Emergency shutdown with CRASH.COM. Use this procedure if OPCRASH fails.

The following sections describe each type of shutdown.

Startup and Shutdown Procedures

4.2 Shutting Down the System

4.2.1 Orderly Shutdown with SHUTDOWN.COM

The SYSSYSTEM:SHUTDOWN.COM command 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 command procedure, log in to the SYSTEM account, enter the following command, and press the Return key:

```
$ @SYSSYSTEM:SHUTDOWN
```

To stop the system after the procedure completes, press Ctrl/P and enter the HALT/CPU=ALL command at the PS-OS-0> prompt.

For more information about the SHUTDOWN command procedure, see the *OpenVMS System Manager's Manual*.

4.2.2 Emergency Shutdown with OPCCRASH.EXE

If you cannot perform an orderly shutdown with SHUTDOWN.COM, run the OPCCRASH emergency shutdown program. Enter the following command and press the Return key:

```
$ RUN SYSSYSTEM:OPCCRASH
```

To stop the system after the procedure completes, press Ctrl/P and enter the HALT/CPU=ALL command at the PS-OS-0> prompt.

For more information about OPCCRASH, see the *OpenVMS System Manager's Manual*.

4.2.3 Emergency Shutdown with CRASH

If OPCCRASH fails, perform an emergency shutdown with CRASH.COM, which is located on the console fixed disk.

Note

Use CRASH only if the system is hung and you cannot log in to the SYSTEM account to use SHUTDOWN.COM or OPCCRASH.

The CRASH command procedure causes the system to fail, resulting in immediate shutdown. To force your system to fail with CRASH, do the following:

1. Press Ctrl/P to stop the system. At the PS-OS-0> prompt, enter the following command and press the Return key:

```
PS-OS-0> HALT/CPU=ALL
```

2. At the PS-CIO-0> prompt, enter the following command and press Return:

```
PS-CIO-0> @CRASH
```

CRASH displays a fatal bugcheck message, as well as additional messages and information. The procedure examines the program counter (PC), the processor status longword (PSL), and the stack pointers. It then deposits values in the PC and PSL to cause an exception condition that sends the contents of memory to the dump file on the system disk. Later you can read the dump file to determine why the system did not respond.

3. CRASH stops the system, displays the contents of the program counter, and displays the console prompt.

Startup and Shutdown Procedures

4.2 Shutting Down the System

If AUTO REBOOT is enabled, the system reboots after CRASH runs. If the system does not automatically reboot, reboot it manually.

4. After the system reboots, you can examine the dump file. To examine the dump file, log in to the SYSTEM account. Enter the following commands and press Return after each one:

```
$ ANALYZE/CRASH SYS$SYSTEM:SYSDUMP.DMP  
SDA> SHOW CRASH
```

For more information about the System Dump Analyzer (SDA), see the *OpenVMS VAX System Dump Analyzer Utility Manual*.

Backup Procedures

Standalone BACKUP makes an exact copy of the system disk. You should back up the system disk for the following reasons:

- In case a problem occurs during a VMS upgrade or update, or during the installation of other software products. *Before* you attempt any of these procedures, you should back up the system disk. If a problem occurs, you can restore the backup copy of the system disk.
- To prevent loss of system files if they are accidentally deleted. *After* you install or upgrade the VMS operating system, or any other software products, you should back up the system disk. If a system file is deleted or renders the system disk inoperable, you can restore the backup copy and continue to use the system.
- In case the drive that holds the system disk malfunctions. If you have a backup copy of the VMS operating system, you can restore it to a functioning disk and continue to use the system.
- To eliminate disk fragmentation, which happens when files are stored noncontiguously on the disk. The BACKUP command creates a copy on which files are stored contiguously.
 - If the system disk is removable, eliminating disk fragmentation is a one-step process. Use the backup copy as the new system disk. Store the old system disk in a safe place.
 - If the system disk is fixed, back it up to a disk or magnetic tape. Then restore the files to the original system disk.

Digital recommends that you use standalone BACKUP to back up and restore your system disk.

This chapter contains information on the following:

- Installing and booting standalone BACKUP on the system disk
- Backing up and restoring the system disk

5.1 Using Standalone BACKUP

Use standalone BACKUP to make a complete backup of the system disk. Standalone BACKUP is a version of the VMS Backup Utility that runs without the support of the entire VMS operating system.

The VMS Backup Utility lets you create and restore backup copies of files, directories, and user disks. However, because the Backup Utility copies only what is on the disk and ignores sections of any open files contained in memory, you should use it to back up user disks, not the system disk. If you use the Backup Utility to create a copy of the system disk, the resulting backup copy will

Backup Procedures

5.1 Using Standalone BACKUP

not contain portions of the files that were in memory or data about files not yet written back to the disk (cache).

Before you use standalone BACKUP, you must shut down the VMS operating system. The shutdown procedure sends the contents of the caches back to the disk and closes any open files. By shutting down the system and using standalone BACKUP, you can make an exact copy of the system disk.

Before installing the VMS operating system, you install standalone BACKUP on the console fixed disk. Instructions for installing standalone BACKUP on the console fixed disk are provided in Section 2.2. You can also install standalone BACKUP on the system disk or on any other media that your system supports. Usually you boot standalone BACKUP from the system disk because it saves time. However, you need standalone BACKUP on the console fixed disk in case the system disk becomes damaged.

5.1.1 Installing Standalone BACKUP on the System Disk

You can install standalone BACKUP in any available root directory on the system disk from [SYS1] to [SYSE]. However, Digital has established [SYSE] as the standard directory for standalone BACKUP.

To install standalone BACKUP in [SYSE] on the system disk, use the following procedure:

1. Log in to the SYSTEM account.
2. Enter the following command and press the Return key:

```
$ @SYS$UPDATE:STABACKIT SYS$SYSDEVICE:
```

The procedure places the files in the directories [SYSE.SYSEXEXE] and [SYSE.SYSS\$LDR] on the system disk. It lists the files as they are copied. When the procedure finishes, it displays the following message:

```
The kit is complete.
```

3. Create a boot command procedure that lets you boot standalone BACKUP from [SYSE]. For more information, see Section 5.1.2.

5.1.2 Booting Standalone BACKUP from the System Disk

You need a special boot command procedure to boot standalone BACKUP from the system disk. Digital recommends that you modify an existing boot command procedure. Ideally, this should be the default boot command procedure, DEFBOO.CMD.

You can choose any unique name in the form xxxBOO.CMD for the command procedure you create. However, Digital suggests you use an existing file name and change the first letter to an X. For example, if you use a copy of DEFBOO.CMD, name the new file XEFBOO.CMD.

To create a boot command procedure that boots standalone BACKUP from [SYSE], use the following procedure. The procedure assumes you are making a copy of DEFBOO.CMD and renaming it XEFBOO.CMD.

Backup Procedures

5.1 Using Standalone BACKUP

1. To make a copy of DEFBOO.CMD, enter the following command and press the Return key:

```
PS-CIO-0> COPY DEFBOO.CMD XEFBOO.CMD
```

2. Enter the following command and press Return:

```
PS-CIO-0> EDIT XEFBOO.CMD
```

3. Edit the line that contains the BOOT command so that it specifies the [SYSE] directory. For example:

```
BOOT BCI12 /R5:E0000000
```

4. Exit from the editor to save the modified version of the file.

To boot standalone BACKUP from [SYSE] on the system disk, use the following procedure:

1. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press the Return key:

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

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press Return for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

2. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press Return:

```
PS-OS-0> HALT/CPU=ALL
```

3. At the PS-CIO-0> prompt, enter the following command and press Return:

```
PS-CIO-0> @XEFBOO
```

4. The procedure asks you for the date and time. Enter the date and time using the 24-hour clock format and press Return. For example:

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-JUN-1990 15:00
```

```
VAX/VMS Version V5.4 Major version id = 1 Minor version id = 0
```

5. The procedure displays a list of the local devices on your system and, if you have them, HSC- and MSCP-served devices. For example:

```
Available device MINE$DJA2:    device type RA60
Available device MINE$DJA3:    device type RA60
.
.
.
```

Check the list of devices. If the list is incomplete, make sure that all the drives are properly connected to the system. See your hardware manuals for details.

Backup Procedures

5.1 Using Standalone BACKUP

6. When standalone BACKUP finishes booting, it displays an identification message followed by the dollar sign prompt (\$):

```
%BACKUP-I-IDENT, standalone BACKUP V5.4; the date is 19-JUN-1990 15:00
$
```

To make a backup copy of the system disk, go to Section 5.2.

To restore a backup copy of the system disk, go to Section 5.3.

5.1.3 Booting Standalone BACKUP from the Console Fixed Disk

If the system disk containing standalone BACKUP should become unusable, you can boot standalone BACKUP from the console fixed disk (assuming that you installed it as described in Section 2.2).

To boot standalone BACKUP from the console fixed disk, use the following procedure:

1. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press Return:

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

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press Return for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

2. Press Ctrl/P. At the PS-OS-0> prompt, enter the following command and press Return:

```
PS-OS-0> HALT/CPU=ALL
```

3. At the PS-CIO-0> prompt, enter the following command and press Return:

```
PS-CIO-0> @CSAB00
```

4. The procedure asks you for the date and time. Enter the date and time using the 24-hour clock format and press Return. For example:

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-JUN-1990 15:00
```

```
VAX/VMS Version V5.4 Major version id = 1 Minor version id = 0
```

5. The procedure displays a list of the local devices on your system and, if you have them, HSC- and MSCP-served devices. For example:

```
Available device MINE$DJA2:    device type RA60
Available device MINE$DJA3:    device type RA60
```

```
.
.
.
```

Check the list of devices. If the list is incomplete, make sure that all the drives are properly connected to the system. See your hardware manuals for details.

6. When standalone BACKUP finishes booting, it displays an identification message followed by the dollar sign prompt (\$):

```
%BACKUP-I-IDENT, standalone BACKUP V5.4; the date is 19-JUN-1990 15:00
$
```

To make a backup copy of the system disk, go to Section 5.2.

To restore a backup copy of the system disk, go to Section 5.3.

5.2 Backing Up the System Disk

It is especially important that you understand the following functions of the /IMAGE and /PHYSICAL qualifiers to the BACKUP command before using standalone BACKUP:

Qualifier	Function
/IMAGE	Lets you create a functionally equivalent copy of the entire system disk
/PHYSICAL	Copies, saves, restores, or compares the entire system disk in terms of logical blocks, ignoring any file structure

For a complete description of the VMS Backup Utility, see the *OpenVMS System Manager's Manual*.

To back up the system disk, use the following procedure:

1. Obtain a scratch disk or tape that you can use for the backup copy. Place it in the appropriate drive. If you are using a tape drive, put it on line. If you are using a disk drive, spin it up.
2. Write-protect the system disk by pressing the Write Protect button on the disk drive.
3. Boot standalone BACKUP as described in either Section 5.1.2 or Section 5.1.3.
4. Determine the device names of the drive holding the system disk and the drive holding the backup disk or tape. For the list of device names for the VAX 8820, 8830, and 8840 computers, see Table 3-1.
5. Enter the BACKUP command in one of the following formats. If you are backing up the system disk to a disk, use the first command. If you are backing up the system disk to a magnetic tape, use the second command.

```
$ BACKUP/IMAGE/VERIFY source-drive: target-drive:
```

```
$ BACKUP/IMAGE/VERIFY source-drive: target-drive:saveset.BCK/REWIND/LABEL=volume-label
```

These commands use the following values:

- *source-drive* is the location of the files you want to back up. Use the device name of the drive holding the system disk.
- *target-drive* is the destination. Use the device name of the drive holding the backup disk or tape.
- *saveset.BCK* is the name of the save set (the name should reflect the contents of the backup tape and cannot exceed 17 characters in length).
- *volume-label* is the volume label of the tape in the target drive. If the tape has already been initialized, use the same volume label that was assigned by the INITIALIZE command. If the tape has not been initialized, you can assign a volume label at this time. The volume label can have up to six characters.

The following example uses the BACKUP command to make a backup disk. You can use a backup disk as a system disk.

```
$ BACKUP/IMAGE/VERIFY DUA0: DUA1:
```

Backup Procedures

5.2 Backing Up the System Disk

The following example uses the BACKUP command to make a backup tape. You must restore the contents of a backup tape to a disk before you can use them. For more information, see Section 5.3.

```
$ BACKUP/IMAGE/VERIFY DUA0: MSA0:JUN_19_1990.BCK/REWIND/LABEL=SYSDSK
```

6. When the procedure is finished, it displays the following message:

```
%BACKUP-I-PROCDONE, Operation completed. Processing finished at 19-JUN-1990 15:00  
If you do not want to perform another standalone BACKUP operation,  
use the console to halt the system.
```

```
If you do want to perform another standalone BACKUP operation,  
ensure the standalone application volume is online and ready.  
Enter "YES" to continue:
```

7. Press Ctrl/P. At the PS-OS-0> prompt, enter the HALT command and press the Return key.
8. Reboot the system.

Store the backup copy of the system disk in a safe place.

Note

The BACKUP command creates a system disk that includes a set of volume parameters provided by Digital. These volume parameters include a CLUSTER_SIZE (disk access scheme) value of 1. (The CLUSTER_SIZE parameter refers to the way files are stored on the disk, NOT to VAXclusters.) Most volume parameters can be changed later with the SET VOLUME command. However, to change the CLUSTER_SIZE parameter you must back up the system disk to a disk that has been previously initialized with the CLUSTER_SIZE value that you want. To prevent the BACKUP command from reinitializing the target disk, use the /NOINITIALIZE qualifier. For more information, read about initializing public volumes in the *OpenVMS System Manager's Manual*. For more information on the BACKUP command, see the *OpenVMS System Management Utilities Reference Manual*.

5.3 Restoring the System Disk

To restore the system disk, use the following procedure:

1. Write-protect the backup disk or tape.
2. Place the backup disk or tape into an appropriate drive. If you are using a tape drive, put it on line. If you are using a disk drive, spin it up.
3. Boot standalone BACKUP as described in Section 5.1.2 or Section 5.1.3.
4. Place a scratch disk in the drive you intend to use for the new system disk. Spin it up but do not write-protect it.
5. Determine the device names of the drive holding the system disk and the drive holding the backup disk or tape. For the list of device names for the VAX 8820, 8830, and 8840 computers, see Table 3-1.

Backup Procedures

5.3 Restoring the System Disk

6. Enter the BACKUP command in one of the following formats. If you have a backup disk, use the first command. If you have a backup tape, use the second command.

```
$ BACKUP/IMAGE/VERIFY source-drive: target-drive:
```

```
$ BACKUP/IMAGE/VERIFY source-drive:saveset.BCK/REWIND target-drive:
```

These commands use the following values:

- *source-drive* is the location of the files you want to restore. Use the device name of the drive holding the backup disk or tape.
- *saveset* is the name of the save set, if you have a backup tape.
- *target-drive* is the destination. Use the device name of the drive holding the system disk.

The following example uses the BACKUP command to restore the system disk from a backup disk:

```
$ BACKUP/IMAGE/VERIFY DUA1: DUA0:
```

The following example uses the BACKUP command to restore the system disk from a backup tape:

```
$ BACKUP/IMAGE/VERIFY MSA0:JUN_19_1990.BCK/REWIND DUA1:
```

7. When the procedure is finished, it displays the following message:

```
%BACKUP-I-PROCDONE, Operation completed. Processing finished at 19-JUN-1990 15:00
```

```
If you do not want to perform another standalone BACKUP operation,  
use the console to halt the system.
```

```
If you do want to perform another standalone BACKUP operation,  
ensure the standalone application volume is online and ready.  
Enter "YES" to continue:
```

8. Press Ctrl/P. At the PS-OS-0> prompt, enter the HALT command and press the Return key.
9. Reboot the system.

5.4 Restoring the Console Fixed Disk

If the console fixed disk should become damaged or unusable, restore it using the distribution TK50 tape cartridges that contain the console software and standalone BACKUP. Directions for installing the console software are given in the *Console User's Guide*. Directions for installing standalone BACKUP on the console fixed disk are given in Section 2.2 of this upgrade and installation supplement.

Using SYSGEN to Connect Logical Console Terminals

This appendix explains how to use the System Generation Utility (SYSGEN) to connect logical console terminals. You can connect the physical console terminal to two logical console terminals, OPA4 and OPA5. You can use logical console terminals in the following ways:

- Use OPA4 as a local user terminal.
- Use OPA5 as a remote diagnostic terminal. If you connect a terminal to the remote diagnostic port (as described in the *Console User's Guide*), that terminal automatically becomes the OPA5 console terminal.

Information displayed on logical console terminals is not written to the console log file. If you use a logical console terminal and do not have a printer attached to the console subsystem, all the information displayed on the terminal screen is lost as it scrolls off the console terminal screen.

When you connect to a different console terminal, output sent to the original console terminal is suspended. Therefore, you do not see any messages sent to the first console terminal. The messages are stored and will appear when you set the console terminal back to the original one.

Enter the following commands to connect OPA4 (local user terminal) and OPA5 (remote diagnostics port) permanently:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> CONNECT CONSOLE/USER      !Connects OPA4
SYSGEN> CONNECT CONSOLE/REMOTE   !Connects OPA5
SYSGEN> EXIT
```

To use the OPA4 console terminal, enter the following commands:

```
$ Ctrl/P
>>> SET TERMINAL OPA4
>>> SET TERMINAL PROGRAM
```

To use the OPA5 console terminal, enter the following commands:

```
$ Ctrl/P
>>> SET TERMINAL OPA5
>>> SET TERMINAL PROGRAM
```

Note that you do *not* need to halt the system before entering the SET TERMINAL command.

You cannot perform all console-mode operations from OPA4 and OPA5. Some VMS programs and utilities require direct communication with the console terminal. These programs work *only* with the OPA0 console terminal.

Using SYSGEN to Connect Logical Console Terminals

For example, if you want to use the XDELTA Utility or any other utility that performs input and output (I/O) operations directly with the console terminal, the console terminal must be set to OPA0.

The reason for this restriction is that OPA0, OPA4, and OPA5 share the same interface and you can enable all three simultaneously. To avoid using multiple console terminals, the VMS operating system performs I/O operations only with the OPA0 console terminal.

If you are using OPA4 or OPA5 and the operating system begins an I/O operation to OPA0, the console will appear to be inoperative. Enter the following commands to switch back to OPA0:

```
$   
>>> SET TERMINAL OPA0  
>>> SET TERMINAL PROGRAM
```

Glossary

boot or bootstrap

The process of loading system software into a processor's main memory. This supplement uses the term *boot* to refer to this process.

boot command procedure

A program stored on the console fixed disk that is used to boot the VMS operating system from a specified controller. Digital provides a boot command procedure for each controller that the processor supports.

boot name

The abbreviated name of the boot command procedure you use to boot the system.

boot server

A VAX computer that is part of a local area VAXcluster. The boot server in a local area VAXcluster has a system disk that contains cluster common files; other nodes in the cluster (satellite nodes) can access these files. See also *satellite node*.

CI-only VAXcluster

A computer system consisting of a number of VAX computers. It uses only the computer interconnect (CI) to communicate with other VAX computers in the cluster.

CIBCA

A computer interconnect (CI) port on a VAX Backplane Interconnect (VAXBI) that does not require a cabinet.

CIBCI

A computer interconnect (CI) port on a VAX Backplane Interconnect (VAXBI) that requires a cabinet.

computer interconnect (CI)

A type of I/O subsystem that links VAX computers to each other and to HSC devices.

console log file

A file that stores a record of the system operations displayed on the console terminal.

console software

An application program, located on the console fixed disk, that runs the console subsystem.

device name

The name you use to identify a device on the system. A device name indicates the device code, controller designation, and unit number.

hierarchical storage controller (HSC) device

A self-contained, intelligent, mass storage subsystem that lets VAX computers in a VAXcluster environment share disks. Examples of HSC devices are the HSC50 and the HSC70.

HSC drive

Any drive that is connected to an HSC device. A system disk on an HSC drive can be shared by several VAX computers in a VAXcluster environment.

local area VAXcluster

A configuration consisting of a VAX computer that acts as a boot server and a number of low-end VAX computers that act as satellite nodes. Ethernet connects all of the computers. These computers share a single file system.

local drive

Any drive that is connected directly to a VAX computer.

media

A generic term that refers to any packaging agent capable of storing computer software. Examples of media are magnetic tapes, diskettes, disk packs, and tape cartridges.

mixed-interconnect VAXcluster

A computer system consisting of a number of VAX computers. It uses both the computer interconnect (CI) and Ethernet to communicate with other VAX computers in the cluster.

remote console terminal

A console terminal (OPA5) located at a Digital Diagnostics Center, used to control system operations during diagnostic testing.

satellite node

A VAX computer that is part of a local area VAXcluster. A satellite node is booted remotely from the system disk of the boot server in the local area VAXcluster. See also boot server.

save set

The format that the VMS Backup Utility stores files in. The VMS operating system is shipped in this format.

scratch disk

A blank disk or a disk with files that you no longer need.

spin up/spin down

To spin up means to bring a disk drive up to operating speed. To spin down means to bring it to a gradual stop.

standalone BACKUP

A version of the Backup Utility that runs from memory without the control of the VMS operating system.

standalone system

A computer system with only one VAX computer.

system disk

The disk that contains (or will contain) the VMS operating system. A VMS system disk is set up so that most of the VMS files can be shared by several VAX computers. In addition, each computer has its own directory on the system disk that contains its page, swap, and dump files.

VAX Backplane Interconnect (VAXBI)

A system bus that connects the CPU and memory to the I/O buses.

VAXBI node

A device on the VAXBI. I/O adapters are one type of node on the VAXBI.

VAXcluster environment

A computer system consisting of a number of VAX computers. There are three types of VAXcluster environments: CI only, local area, and mixed interconnect.

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