OpenVMS VAX Version 5.5–2H4 Release Notes and Update Procedures

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This document contains release notes and update procedures for the OpenVMS VAX Version 5.5–2H4 operating system.

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Preface

The OpenVMS VAX Version 5.5–2H4 operating system is available as an update and as a complete kit that you install on your system. This release provides support for new VAX 4000 series and MicroVAX 3100 series computers, tagged command queuing (TCQ), and DEC LAN device drivers.

Note

Read the release notes in Chapter 1 *before* applying the update or performing an installation.

Intended Audience

This document is intended for anyone responsible for maintaining the OpenVMS VAX operating system.

Document Structure

This document is organized as follows:

- Chapter 1 includes release notes relevant to this kit.
- Chapter 2 describes how to prepare your system for an update, how to use the update procedure, and how to perform postupdate tasks.

Associated Documents

If you are updating your OpenVMS VAX Version V5.5–2 system to Version 5.5–2H4, or if you are performing a full installation, you might need to refer to one or more of the following documents:

- The VMS upgrade and installation supplement for your VAX computer (required for full installation)
- The *VMS Version 5.5 Upgrade and Installation Manual* (required for full installation)
- The *VMS Version 5.5 Release Notes*
- The *VMS Version 5.5–2 Release Notes*

Conventions

The following conventions are used in this manual:

( )	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 an OpenVMS file specification, or in the syntax of a substring specification in an assignment statement.)
italic text	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 *number*), command lines (for example, /PRODUCER=*name*), and command parameters in text.
boldface text	Boldface text represents the introduction of a new term or the name of an argument, an attribute, or a reason. Boldface text is also used to show user input in Bookreader versions of the manual.
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 radixes—binary, octal, or hexadecimal—are explicitly indicated.
. . .	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.

1

OpenVMS VAX Version 5.5–2H4 Release Notes

This chapter contains general OpenVMS VAX Version 5.5–2H4 release notes plus specific release notes about the StorageWorks RAID Array 110 Subsystem with SCSI-2 tagged command queuing (TCQ) and DEC LAN device driver support.

1.1 General Release Notes

This section provides guidelines for installing and updating your system, correcting problems, modifying system parameters, and using the DUP Driver Utility on VAX 4000 series systems.

1.1.1 Guidelines for Installing and Updating

The following sections provide information about the distribution media and guidelines for updating to or installing the OpenVMS VAX Version 5.5–2H4 operating system.

1.1.1.1 Distribution Media

The OpenVMS VAX Version 5.5–2H4 update and installation save sets are available as follows, depending on the type of distribution media you received:

- If you are performing a full installation from tape, there are two cartridges: one (with a volume label of VMS2H4) containing the OpenVMS VAX Version 5.5–2H4 save sets and one (with a volume label of DEC2H4) containing standalone BACKUP and the DECwindows save sets.
- If you are updating from tape, there is one cartridge (with a volume label of VMS2H4) containing the update save sets.
- If you are updating or installing from a compact disc, the save sets for both operations are on one compact disc (with a volume label of VMS2H4055).

1.1.1.2 When to Update

You can update directly to Version 5.5–2H4 of the OpenVMS VAX operating system only if your VAX computer is running Version V5.5–2 of the OpenVMS VAX operating system. (You *cannot* update from any other version of the operating system, including Version A5.5–2.)

If you are adding a new VAX computer (including VAX 4000 Model 100A, 500A, 600A, 700A, and MicroVAX 3100 Model 90 systems) to an existing cluster, you can update directly to Version 5.5–2H4 of the OpenVMS VAX operating system if you perform the update on the Version V5.5–2 boot node in the cluster.

Note

When deciding whether to update your system, note the following:

- The update procedure does not initialize the system disk; that is, it leaves layered products and user files intact.
- You can apply the update on a system running *only* OpenVMS VAX Version V5.5–2.

  If your system is running any version of OpenVMS VAX (including Version A5.5–2) prior to Version V5.5–2, you must upgrade to Version V5.5–2 before applying this update. (See the *VMS Version 5.5 Upgrade and Installation Manual* for a description of the upgrade procedure.)
- You cannot *upgrade* to Version 5.5–2H4 of the OpenVMS VAX operating system. You must *update* your system or perform a full installation.

1.1.1.3 How to Update

To update your system to Version 5.5–2H4 of the OpenVMS VAX operating system, follow the procedures described in Chapter 2.

1.1.1.4 When to Install

You must perform a complete installation (rather than an update) if your system meets one of the following conditions:

- Your VAX computer is new, including VAX 4000 Model 100A, 500A, 600A, 700A, and MicroVAX 3100 Model 90 systems. (However, if you are adding one of these new systems to an existing cluster, you do not need to perform an installation if you update the Version V5.5–2 boot node in that cluster.)
- Your VAX computer has never had any version of the OpenVMS VAX operating system running on it.
- Your VAX computer is running the OpenVMS VAX operating system and you want to destroy the contents of the system disk (both VMS and user files).

1.1.1.5 How to Install

To install the OpenVMS VAX Version 5.5–2H4 operating system, do the following:

1. Review the the release notes in this chapter.
2. Review the *VMS Version 5.5 Release Notes* and the *VMS Version 5.5–2 Release Notes* for information relevant to your specific computer and to installation procedures in general.
3. Begin the installation with the *VMS Version 5.5 Upgrade and Installation Manual* and then refer (when instructed to do so) to the VMS upgrade and installation supplement for your VAX computer to perform specific operations.

Note

As you use the *VMS Version 5.5 Upgrade and Installation Manual* to perform the installation, note the following supplemental information:

- When you boot from the InfoServer, enter ISL_SVAX_U2H4055 when the installation procedure prompts you for the file name that contains the initial system load (ISL) boot program.

- When you create the new system disk, specify VMS2H4055.B as the save-set name when you enter the backup command that transfers the save set from your source drive to your target drive.

1.1.2 Nonmatching File Identifiers

During the update procedure (step 9 in Section 2.3), the procedure checks the file identifiers of the files being replaced by the installation of the OpenVMS VAX Version 5.5–2H4 operating system.

The procedure assumes that the update is being installed on an OpenVMS VAX Version V5.5–2 system. However, if your Digital Customer Support Center supplied you with a remedial kit *after* the release of the OpenVMS VAX Version V5.5–2 operating system, that remedial kit might have updated one of the files that will be replaced by the OpenVMS VAX Version 5.5–2H4 update. In such a case, the file supplied by the remedial kit might have a file identifier that is different from the file supplied by the OpenVMS VAX Version V5.5–2 release.

If the Version 5.5–2H4 update procedure encounters a file that has an identifier that does not match and you choose to continue with the update, the procedure will replace the file, possibly overwriting the function supplied by the remedial kit. Therefore, if you are not sure whether you should replace the identified file, answer NO when the update procedure prompts you to continue the update. Then contact your local Digital Representative about the file in question. (No changes to the system disk will occur if you exit from the update in this manner.)

1.1.3 INVEXCPTN SYSGEN Crash Following SCSI Bus Reset

It is possible for a SCSI bus reset to create a condition that will cause the system to crash with an INVEXCPTN when you execute the SYSGEN command AUTOCONFIGURE ALL or run SYS$UPDATE:AUTOGEN.COM. This condition affects VAXstation 4000 series systems equipped with the PMAZ adapter, which supports the TURBOchannel to SCSI option (PKB, PKC, and PKR port drivers). The condition might also occur on systems that do not have a PMAZ adapter. (See Table 1–1.)

Before you execute the SYSGEN command AUTOCONFIGURE ALL or run SYS$UPDATE:AUTOGEN.COM, Digital recommends that you do the following:

1. Check for SCSI port device errors by entering the following command:

   ```
   $ SHOW DEVICE PK
   ```

2. If the display lists errors for either the PKA0 or PKB0 port devices, create an error log file containing errors that occurred since you last booted the system, by doing the following:

   a. Enter the SHOW SYSTEM command and note the value in the Uptime field. For example:

```
$ SHOW SYSTEM

VAX/VMS V5.5-2  on node TREX   9-JUL-1993 10:26:52.49   Uptime   3 05:03:09
  Pid    Process Name    State  Pri      I/O       CPU       Page flts Ph.Mem
1A000201 SWAPPER         HIB     16        0   0 00:04:16.36         0      0
.
.
.
```

b. Enter the following command (including the value of the Uptime field with the /SINCE qualifier) to create an error log file named ERRORS.TMP:

```
$ ANALYZE/ERROR_LOG/INCLUDE=PK/SINCE="-3-05:03:09"/OUT=ERRORS.TMP
```

3. If the error log file logs a SCSI bus reset (indicated by the string "BUS RESET INITIATED" or "BUS RESET DETECTED"), do *not* execute the SYSGEN AUTOCONFIGURE ALL command or run SYS$UPDATE:AUTOGEN.COM. Instead, do the following:

   a. Shut down the system.

   b. Reboot.

   c. Allow the system to run for 24 hours to obtain new feedback information.

   d. Contact your Digital Representative.

1.1.4 Possible INCONSTATE Crash Due to Insufficient LRPCOUNT

If a system has been configured with no feedback information, the value of the system parameter LRPCOUNT (the number of preallocated large request packets) might be set too low. This low setting could cause the system to crash with an INCONSTATE error when you execute the SYSGEN command AUTOCONFIGURE ALL or run the SYS$UPDATE:AUTOGEN.COM procedure.

Digital recommends, therefore, that after you install a new software product or add a new device, you run the system under a normal load for at least 24 hours before running SYS$UPDATE:AUTOGEN.COM. This will allow the system to build up enough feedback information for the operating system to accurately determine new values for all system parameters, including LRPCOUNT.

If you cannot run the system for 24 hours before running SYS$UPDATE:AUTOGEN.COM, or if you must execute the SYSGEN command AUTOCONFIGURE ALL, Digital recommends that you enter the DCL command SHOW MEMORY before performing either operation. If there are at least 5 LRPs available, you can then run SYS$UPDATE:AUTOGEN.COM or execute the SYSGEN command AUTOCONFIGURE ALL. If there are *less* than 5 LRPs available, reboot the system using a larger value for the system parameter, LRPCOUNT.

You can avoid this situation by making sure the system is configured with more LRPs than would otherwise be necessary if based solely on the system's hardware configuration. You can accomplish this by increasing the value of the LRPCOUNT parameter by 5 in the SYS$SYSTEM:MODPARAMS.DAT file. The following example shows how to add this parameter to SYS$SYSTEM:MODPARAMS.DAT:

```
.
.
.
VAXCLUSTER=0
SCSNODE=""
WINDOW_SYSTEM=1
WSMAX=18000
SPTREQ=10000
VIRTUALPAGECNT=50000
PROCSECTCNT=48
ADD_LRPCOUNT=5
```

1.1.5 Incorrect Image Backups from an RF73 Disk

When performing an image backup from an RF73 disk (or a disk with a cluster size of 4 blocks) to an RF74 disk (or a disk with a cluster size of 7 blocks), the Backup utility does not check the file size when it is allocating space for the file being copied. As such, if the file has an allocation greater than the value of the CLUSTER_SIZE attribute established during initialization, the Backup utility will allocate one more cluster size number of blocks to the allocation size even though the actual file size is less than the cluster size. For example, during an image backup, a file that uses 6 blocks and is allocated 8 blocks (which displays as 6/8 on the screen if you enter a DIRECTORY/SIZE=ALL command) shows an increase in its allocation size to 14, instead of 7, after it is copied to the target disk.

As a result of this problem, the following files are copied to the image system disk with a blocks used/allocation size of 6/14 blocks:

SYS$COMMON:[SYS$LDR]LIDRIVER.EXE
SYS$COMMON:[SYS$LDR]LPDRIVER.EXE

This incorrect allocation size causes standalone BACKUP to *fail* on the booted image system disk.

To correct this problem, recopy the two previously listed files to the same directory after the image backup, by using the following command (which also specifies the correct allocation size):

```
$ COPY/ALLOCATION=7 SYS$COMMON:[SYS$LDR]LIDRIVER.EXE SYS$COMMON:[SYS$LDR]
$ COPY/ALLOCATION=7 SYS$COMMON:[SYS$LDR]LPDRIVER.EXE SYS$COMMON:[SYS$LDR]
```

1.1.6 Using the DUP Driver Utility

The following notes supplement the information contained in your VAX installation supplement:

- For certain VAX 4000 series systems with embedded DSSI buses, you can specify a DSSI bus number from 0 to 3 (rather than only 0 or 1).
- After you start the DUP Driver Utility, you can change the DSSI node name by entering the following command at the PARAMS> prompt (instead of SET NODE NAME). For example:

  ```
  PARAMS> SET NODE <BARNEY>
  ```

1.2 StorageWorks RAID Array 110 Subsystem and TCQ Release Notes

This section includes release information for the StorageWorks RAID Array 110 Subsystem and tagged command queuing (TCQ).

The StorageWorks RAID Array 110 Subsystem is an implementation of RAID (Redundant Array of Independent Disks) that can be configured with no single point of failure. Tagged command queuing (TCQ) allows multiple IO's to be outstanding to a given device. (For more information about tagged command queuing, refer to the ANSI SCSI-2 X3T9.2 specification.)

Support for TCQ is available in the DK driver plus the port drivers listed in Table 1–1 (which lists queuing support that is available for specific VAX systems and port drivers).

Table 1–1 TCQ and SCSI Port Driver Support for VAX Systems

	Port Drivers						
	Queuing Available			Queuing Not Available			
Systems	**PKB**	**PKC**	**PKR**	**PKI**	**PKS**	**PKN**	**Adapter**
MicroVAX 3100							
Model 30	-	Y	-	-	-	-	Native
Model 40	-	Y	-	-	-	-	Native
Model 80	-	Y	-	-	-	-	Native
Model 90	Y	-	-	-	-	-	Native
VAXstation 4000							
Model VLC	-	Y	-	-	-	-	Native
Model 60	-	Y	Y	-	-	N	Native, PMAZ
Model 90	Y	-	Y	-	-	N	Native, PMAZ
VAX System 4000							
Model 100	Y	-	-	N	-	-	Native, KZQSA

Key to Port Drivers

Y—The StorageWorks RAID Array 110 Subsystem can be configured on this port and system.
N—The StorageWorks RAID Array 110 Subsystem is *not* functional on these ports and systems, although the TCQ kit can be installed and existing SCSI devices will work.

Notes

Note the following about TCQ support and specific VAX computers:

- VAXstation 3100 series computers (Models 10, 20, 30, 40, 38, 48, and 76) do not support TCQ. However, if the TCQ kit is installed on one of these systems, existing SCSI devices will still work on the PKN port driver (with a native adapter).
- VAXstation 3520 and VAXstation 3540 computers do not support TCQ. However, if the TCQ kit is installed on one of these systems, existing SCSI devices will still work on the PKS port driver (with a native adapter).
- VAX 4000 series computers other than the VAX 4000 Model 100, do not support TCQ. However, if the TCQ kit is installed on one of these systems, existing SCSI devices will still work on the PKI port driver (with a KZQSA adapter).

The following sections contain additional release information about the StorageWorks RAID Array 110 Subsystem and TCQ support.

1.2.1 Order of Installation

The operating system and other components must be installed in the following order.

For an Update

1. Version V5.5–2 of the OpenVMS VAX operating system (if you are not already running this version)
2. OpenVMS VAX Version 5.5–2H4 update
3. RAID Utilities (if you purchased that product)
4. Any new versions of layered products containing SCSI class drivers

For an Installation

1. OpenVMS VAX Version 5.5–2H4 remastered kit
2. RAID Utilities (if you purchased that product)
3. Any new versions of layered products containing SCSI class drivers

1.2.2 Avoiding Multiple Versions of Device Drivers

Device drivers normally reside in a directory identified by the system logical name SYS$LOADABLE_IMAGES, from which the drivers are loaded when the system is booted. Note, however, that this logical name translates to a two-element list of directories that are searched in the following order:

1. SYS$SPECIFIC:[SYS$LDR]
2. SYS$COMMON:[SYS$LDR]

The OpenVMS installation procedures always place drivers in the SYS$COMMON:[SYS$LDR] directory, which is the directory searched *after* the SYS$SPECIFIC:[SYS$LDR] directory. Therefore, if you (or another privileged user) have copied a different version of a driver to the SYS$SPECIFIC:[SYS$LDR] directory (the directory searched first), that version of the driver will continue to be used instead of the new version that is copied to the SYS$COMMON:[SYS$LDR] directory during the installation.

To avoid this problem, check the SYS$SPECIFIC:[SYS$LDR] directory before you install a new device driver to make sure there is not another version of that driver. If there is, delete or rename that file before installing the new version.

1.2.3 Third-Party Driver Restrictions

Third-party drivers are commonly used to support devices other than disks and tapes (such as scanners). If you are not sure whether or not your system contains any third-party SCSI devices, contact your system manager.

If you do use third-party drivers, note the following:

- If you plan to use the DEC SCSI TCQ Driver Kit for OpenVMS VAX Version 1.0 product in conjunction with a third-party product using SCSI class drivers or a Digital Layered Product with SCSI class drivers (or both), you must obtain a version of that product that is compatible with DEC SCSI TCQ Driver Kit for OpenVMS VAX Version 1.0. (Contact your local Digital Representative to see if the appropriate version of the product is available.)

- Due to the changes in the driver data structures, any third-party SCSI drivers will require recompilation against this kit. If you connect existing third-party SCSI devices without first recompiling them, your system will display the status of those devices as "Offline".

1.2.4 Specifying Logical Unit Numbers

When specifying a logical unit number (LUN), note the following:

- The LUN is an encoded three-bit identifier for a physical or virtual device, in the range of 0–7 and should not be confused with the SCSI-ID. For example, a device name of DKA100 identified as follows:
  - *DK* is the device code of the boot device.
  - *A* is the boot device controller designation.
  - *1* is the SCSI ID value.
  - *0* (which follows the SCSI ID value of *1*) is a placeholder value that is always zero.
  - *0* (the last value in the device name) is the LUN.
- Booting an OpenVMS VAX system from other than logical unit 0 (LUN0) is not supported. Boot devices are required to be at logical unit 0. Other logical units (LUN1-LUN7) can be used as data storage devices.
- Digital strongly recommends that you retain a LUN of 0 on the StorageWorks RAID Array 110 Subsystem device because the console expects to see a LUN 0 for all its disk devices. If a device does not have a LUN 0, it will not be identified and sized after you enter the console command SHOW DEV. Devices without LUN 0 will be designated "Offline" by the OpenVMS VAX operating system.

  See the *DEC RAID OpenVMS VAX Utility Release Notes and Installation Guide* for a description of how to re-create LUN 0.

1.2.5 Booting Not Supported for TURBOchannel Devices

VAX workstations running the OpenVMS VAX operating system do not provide support for system booting from a TURBOchannel device. You cannot, therefore, boot from a StorageWorks RAID Array 110 Subsystem connected to a TURBOchannel-SCSI adapter.

1.2.6 SHOW DEVICE Does Not Display Capacity

On some VAX systems, the capacity of the StorageWorks RAID Array 110 Subsystem is not displayed after you enter the following console command:

```
>>> SHOW DEVICE
```

Instead the capacity displays as "...". (This is due to the current settings for spin up time in the EEPROM of the StorageWorks RAID Array 110 Subsystem.)

If you reenter the SHOW DEVICE command, the correct capacity will be displayed. This will be corrected in an update to the DEC RAID OpenVMS VAX Utility Kit.

1.2.7 Mounting a Disk in a Host-Based Shadow Set

To mount a disk in the StorageWorks RAID Array 110 Subsystem in a Host-Based Shadow set, you must use the /OVERRIDE=NO_FORCED_UNIT qualifier with the MOUNT command.

The StorageWorks RAID Array 110 Subsystem does not support the READ/WRITE LONG SCSI commands which are necessary for implementing the FORCED ERROR function in SCSI. Without FORCED ERROR, you must override that check by the shadowing driver.

1.3 DEC LAN Device Driver Release Notes

This section describes the release information for the DEC LAN Device Driver support contained in the OpenVMS VAX Version 5.5–2H4 operating system.

This release provides support for the DEC FDDIcontroller/Q–bus and DEC FDDIcontroller/TURBOchannel controllers. The QIO interface to these devices is the same as that described for the DEC FDDIcontroller 400 (DEMFA) in Chapter 6 of the *VMS I/O User's Reference Manual: Part II*; however, the DEC FDDIcontroller/Q–bus device type is DT$_FQ_DEFQA (58 decimal) and the DEC FDDIcontroller/TURBOchannel device type is DT$_FC_DEFTA (57 decimal).

The following sections contain additional information about DEC LAN device driver support.

1.3.1 DEC FDDIcontroller/Q–bus Controller

The FQDRIVER supports the DEC FDDIcontroller/Q–bus (DEFQA). Its device name is FQcu, where **c** represents the controller and **u** represents the unit number (for example, FQA0).

Using DECnet–VAX for OpenVMS with the Controller

To use DECnet–VAX for OpenVMS with the DEC FDDIcontroller/Q–bus on the OpenVMS VAX Version 5.5–2H4 operating system, you must define a logical once per system boot procedure before invoking NETCONFIG.COM or STARTNET.COM command procedures. Use the following DCL command to define the required logical:

```
$ DEFINE/SYSTEM FXc0 FQc0
```

In this command, **c** represents the controller (for example, FQA0). Note that this logical is required only when using DECnet–VAX for OpenVMS on the OpenVMS VAX Version 5.5–2H4 operating system.

The NCP LINE and CIRCUIT name for the Q–bus controller is as follows:

```
MFA-<controller number>
```

(For example, MFA-0 for FQAn.)

Using DECnet/OSI for OpenVMS with the Controller

To use DECnet/OSI for OpenVMS with the DEC FDDIcontroller/Q–bus on the OpenVMS VAX Version 5.5-2H4 operating system, you must define a logical in SYS$MANAGER:SYCONFIG.COM before invoking NET$CONFIGURE.COM or NET$STARTUP.COM command procedures. Use the following DCL command to define the required logical:

```
$ DEFINE/SYSTEM FXc0 FQc0
```

In this command, **c** represents the controller (for example, FQA0). Note that this logical is required only when using DECnet/OSI on the OpenVMS VAX Version 5.5–2H4 operating system.

Defining the logical in SYS$MANAGER:SYCONFIG.COM makes the definition permanent.

1.3.2 DEC FDDIcontroller/TURBOchannel Controller

The FCDRIVER supports the DEC FDDIcontroller/TURBOchannel. Its device name is FCcu where **c** is the controller and **u** is the unit number (for example, FCA0).

The NCP LINE and CIRCUIT name for the DEFTA controller is as follows:

```
FZA-<controller number>
```

(For example, FZA-0 for FCAn.)

2

Updating to OpenVMS VAX Version 5.5–2H4

This chapter describes how to prepare your system for an update, how to use the update procedure, and how to perform postupdate tasks.

Note

Before you update your system, be sure you have reviewed the update and installation guidelines in Section 1.1.1.

2.1 Preparing Your System

Before you install the kit, perform the following tasks:

1. Make sure that your system is running OpenVMS VAX Version V5.5–2.
2. Using OpenVMS VAX Version V5.5–2 standalone BACKUP, make an image backup copy of the system disk.

   A system failure at a critical point in the update procedure might corrupt the contents of the system disk. Therefore, it is *important* that you back up the system disk at this time so that you always have a working copy.

   For more information about backing up your system disk, see the upgrade and installation supplement for your VAX computer.
3. Prepare the system disk. Make sure that you have at least 26,000 blocks of free space on the system disk for the update.
4. Make sure your system has a high enough quota for the size of the system working set (the value of the SYSMWCNT parameter). The system requires a minimum quota of 1900.

   To determine the value of the SYSMWCNT parameter, enter the following command:

   ```
   $ WRITE SYS$OUTPUT F$GETSYI("SYSMWCNT")
   ```

   If the number returned is less than 1900, modify the system parameter SYSMWCNT. For example, if you must increase SYSMWCNT by 200 to reach a quota of 1900, add the following line to SYS$SPECIFIC:[SYSEXE]MODPARAMS.DAT:

   ```
   MIN_SYSMWCNT = 200 + current-value
   ```
5. Make sure your system has enough free global pages to install the update kit. The system requires a minimum of 30,000 free global pages.

   To determine the number of free global pages, enter the following command:

   ```
   $ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLPAGES")
   ```

If the number returned is less than 30,000, modify the system parameter GBLPAGES. For example, if you must increase GBLPAGES by 64 to reach 30,000 global pages, add the following line to SYS$SPECIFIC:[SYSEXE]MODPARAMS.DAT:

```
MIN_GBLPAGES = 64 + current-value
```

6. Change the values of the system parameters you modified by running the AUTOGEN.COM procedure as follows:

   ```
   $ @SYS$UPDATE:AUTOGEN GETDATA REBOOT
   ```

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

7. To make sure that the SYSTEM account has sufficient quotas and limits, use the OpenVMS Authorize utility as follows:

   a. Enter the following commands:

      ```
      $ SET DEFAULT SYS$SYSTEM
      $ RUN AUTHORIZE
      UAF> SHOW SYSTEM
      ```

   b. Compare the SYSTEM account's limits and quotas to the following minimum required values:

Quota Name	Minimum Values
Open file quota (FILLM)	100
Buffered I/O limit (BIOLM)	18
Direct I/O limit (DIOLM)	18
AST limit (ASTLM)	24
Enqueue quota (ENQLM)	200
Buffered byte quota count (BYTLM)	32768

   c. If necessary, adjust the limits and quotas until they are equal to or greater than the required values. You can change each value by entering a command in the following format:

      ```
      UAF> MODIFY SYSTEM/limit=new_value
      ```

      For example:

      ```
      UAF> MODIFY SYSTEM/DIOLM=18
      ```

   d. Exit the OpenVMS Authorize utility by entering the following command:

      ```
      UAF> EXIT
      ```

   e. If you adjust any of the SYSTEM account's parameter or quota values, log out and log in again so that the new values take effect.

8. Once you are logged in to the SYSTEM account, make sure that you are the only user by completing the following steps:

   a. Enter the following command to notify current users that they must log out:

      ```
      $ REPLY/ALL/BELL/SHUTDOWN "Log out for Version 5.5-2H4 update."
      ```

b. Enter the following command to prevent nonprivileged users from logging in:

```
$ SET LOGINS/INTERACTIVE=0
```

9. If you want to shut down the DECnet software on your system, enter the following commands and then go to Section 2.2:

```
$ RUN SYS$SYSTEM:NCP
NCP> SET EXECUTOR STATE OFF
NCP> EXIT
```

2.2 Matching Update Procedures to System Configurations

Different system configurations require slightly different update procedures. The following list indicates the possible system configurations and the section to which you should refer:

- VAXcluster environment (not including mixed-version VAXclusters): Section 2.2.1
- Mixed-version VAXclusters: Section 2.2.1. In mixed-version VAXclusters, only reapply the update to other system disks that are running Version V5.5–2.
- Mixed-architecture VAXclusters: Section 2.2.1. In mixed-architecture VAXclusters, only reapply the update to other system disks for OpenVMS VAX systems running Version V5.5–2.
- Local area VAXclusters with one boot server and two system disks: Section 2.2.2
- Standalone system: Section 2.3

2.2.1 Updating VAXcluster Environments

Use the following procedure to update all VAXcluster environments that do not contain mixed versions of the operating system.

Note

After completing this procedure, all the systems in your VAXcluster environment will be running the same version of the OpenVMS VAX operating system.

1. Make sure that you have prepared your system for the update as described in Section 2.1.
2. Log in to the SYSTEM account on a node that uses the system disk you are updating.
3. Shut down all other nodes in the cluster that boot from the system disk.
4. Apply the update according to the instructions in Section 2.3.
5. If your VAXcluster environment uses several system disks, repeat steps 1 through 4 in this section for each system disk in the VAXcluster environment.

When the update is complete, perform the postinstallation instructions in Section 2.4.

2.2.2 Updating a Local Area VAXcluster System with One Boot Server and Two System Disks

To update a local area VAXcluster system with one boot server and two system disks, perform the following steps:

1. Make sure that you have prepared your system for the update as described in Section 2.1.
2. Log in to the SYSTEM account on the boot server.
3. Shut down all other nodes in the cluster that boot from the first system disk.
4. Apply the update to the first system disk, according to the instructions in Section 2.3.
5. To update the second disk, perform the following steps:
   a. Log in to the SYSTEM account on a satellite node that boots from the second system disk.
   b. Shut down all other nodes in the cluster that boot from the second system disk.
   c. Apply the update to the second system disk, according to the instructions in Section 2.3.

When the update is complete, perform the postinstallation instructions in Section 2.4.

2.3 Applying the OpenVMS VAX Version 5.5–2H4 Update

To update the OpenVMS VAX Version V5.5–2 operating system, complete the following steps:

1. Place the OpenVMS VAX distribution media in the drive.
2. Start the VMSINSTAL command procedure by entering the following command:

   ```
   $ @SYS$UPDATE:VMSINSTAL VMSU2H4055 MUA0: OPTIONS N
   ```

   Where MUA0 is the device name of the source drive that holds the OpenVMS VAX distribution media. The OPTIONS N portion of the command indicates that you want to display the release notes option menu.

   The following example shows the command line you would enter if your distribution media (VMS2H4) is loaded on a TK50 tape cartridge drive on controller A, with unit number 0:

   ```
   $ @SYS$UPDATE:VMSINSTAL VMS2H4 MUA0: OPTIONS N
   ```

   If you are updating from the InfoServer, the command is similar to the following:

   ```
   $ @SYS$UPDATE:VMSINSTAL VMSU2H4055 DAD1: OPTIONS N
   ```

3. As the update procedure begins, VMSINSTAL displays messages similar to the following:

```
        VAX/VMS Software Product Installation Procedure V5.5

It is 8-JUL-1993 at 13:30.

Enter a question mark (?) at any time for help.

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

   If you backed up the system disk, press the Return key and go to step 4.

   If you have not yet backed up the system disk, do the following:

   a. Enter NO and press the Return key. VMSINSTAL returns to DCL level to permit you to perform the backup.

   b. Back up the system disk.

   c. When the backup is complete, restart the update procedure at step 1 in this section.

4. The procedure displays the following message (in the example, MUA0 is the name of the source drive):

```
Please mount the first volume of the set on MUA0:
* Are you ready?
```

   Make sure the distribution media is in the correct drive, and enter YES.

5. VMSINSTAL continues with the following display:

```
%MOUNT-I-MOUNTED, VMSU2H4 mounted on MUA0:
The following products will be processed:

   VMSU2H4 V5.5

        Beginning installation of VMSU2H4 V5.5 at 13:31.

%VMSINSTAL-I-RESTORE, Restoring product save set A...
```

6. With OPTIONS N selected, the procedure then displays the following message:

```
Release notes included with this kit are always copied to SYS$HELP.

Additional Release Notes Options:

    1.  Display release notes
    2.  Print release notes
    3.  Both 1 and 2
    4.  None of the above

* Select option [2]:
```

   Select option 2 to print the release notes.

   The system displays the following message:

```
* Do you want to continue the installation? [NO]
```

   If you want to continue with the update, enter YES and press the Return key. If you want to abort the update procedure, enter NO and press the Return key. In either case, if you select option 1, 2, or 3, the release notes will be displayed or printed according to your choice.

7. The procedure displays the following messages:

```
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.
* Do you want to purge files replaced by this installation  [YES]?

* Do you have any SCSI Class Drivers not supplied with the OpenVMS
*       VAX operating system installed (eg: DEC IEZ11) [YES]?

    As part of this product's postinstallation procedure, all SCSI Class Drivers
    not supplied as part of the OpenVMS operating system will need to be
    re-compiled against the new SYS$LIBRARY:LIB.MLB before they can be loaded.

    If you have any SCSI Class drives installed, you may want
    to contact your vendor to obtain a version of the driver
    that is compatible with this kit before proceeding with
    this installation.

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

8. If you continue with the installation, the procedure displays the following messages:

```
    To complete the installation of this product, you should reboot
    the system. If it is not convenient to reboot at this time, then
    enter NO to the following question.

    If you enter NO, the installation procedure will terminate.

* Will you allow a system shutdown after this product is installed [YES]?
* How many minutes for system shutdown [0]:
* Do you want to do an automatic system reboot [YES]?

    Completion of this update requires a system reboot.  This
    procedure will automatically shut down the node being updated.  Any
    other VAXcluster nodes using this system disk should be shut down
    before the installation.

    Please ignore any messages you see at the end of the installation
    from INSTALL concerning the failure to REPLACE an entry. The
    "global page table full" messages accompanying the INSTALL messages
    should be ignored as well.  These messages do not affect the
    installation, and conditions causing them will be corrected on
    reboot.

* Press RETURN to continue:
```

9. After you respond to the questions about shutting down and rebooting the system, the procedure continues with a display similar to the following:

```
                        ***********  NOTE **********

    The installation will now check the file identification for the files
    being replaced.  If the identification does not match the OpenVMS
    VAX V5.5-2 identification values expected by this installation,
    there will be additional questions before the installation can continue.

* Press RETURN to continue:

    Now checking the file identification.
```

During this phase, if the procedure finds files (library or image) with file identifiers that do not match, the system displays additional messages. In the the following example, the procedure finds that the image file PKCDRIVER.EXE has a file identifier that does not match:

```
The image identifier for PKCDRIVER.EXE supplied with OpenVMS VAX V5.5-2
is X-9A5.  The image identifier for PKCDRIVER.EXE on the current system
disk is X-13.   If the update continues PKCDRIVER.EXE will be replaced
on your system.

* Do you want to continue the update: [NO]?
```

If you are satisfied the file identifier is correct for the file listed in the message, enter YES and press the Return key. Otherwise, enter NO, press the Return key, and contact your local Digital Representative. (See the release note in Section 1.1.2.)

10. Next, the procedure displays the following messages:

```
No more questions will be asked ...

Now applying the updates ...

     (If reapplying the update, ignore any ECOSET messages,
      and the subsequent NOFILE messages.  These are normal
      and simply mean that the fix has already been applied.)

 A list of these updates will be placed in file
 SYS$UPDATE:VMSU2H4055.TXT at installation completion.

1) CONFIGURE   (new image)  New Id: X-4          Old Id: X-4
2) CPULOA      (new image)  New Id: X-24         Old Id: X-24
3) DECW$DEVICE (miscellaneous fix)
4) ERFNVAX     (new image)  New Id: V05-X01      Old Id: V05-X01
.
.
.

 After rebooting, you may wish to run @SYS$UPDATE:VMSU2H4055-PURGE.COM,
 which purges old copies of files generated by this installation.

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

If the system displays the following question, you must respond by entering YES to complete the update:

```
* Do you really want to shutdown node nodename [NO]?
```

11. When VMSINSTAL completes the update, it displays a message similar to the following:

```
                Installation of VMSU2H4 V5.5 completed at 14:59

%VMSINSTAL-I-SHUTDOWN, This product requires that the system be rebooted.
```

12. If you are installing the update from a console drive, the procedure displays the following message:

```
* Do you want to mount the console volume on MUA0: [NO]?
```

In this message, MUA0 represents the device name of the console device.

Remove the distribution media from the drive, and insert the console volume. Enter YES and press the Return key.

13. If you answered YES to the question in step 9, the procedure now shuts down the system.

14. Reboot the system with the updated system disk. If you have a VAXcluster environment, reboot the nodes that use the newly updated system disk.

2.4 Tasks to Perform After the Update

After you apply an update to your system, Digital recommends that you perform the following tasks:

- After the update is complete, set the correct date and time, as follows:
  - Use the following command to set the time in a nonclustered node:

    ```
    $ SET TIME = 13-JUL-1992:11:22:00
    ```

  - Use the following commands to set the time in a VAXcluster:

    ```
    $ RUN SYS$SYSTEM:SYSMAN
    SYSMAN> SET ENVIRONMENT/CLUSTER
    SYSMAN> SET PROFILE/PRIVILEGE=(LOG_IO,SYSLCK)
    SYSMAN> CONFIGURATION SET TIME 13-JUL-1992:11:22:00
    SYSMAN> EXIT
    ```

  Refer to your system management manuals for more information about how the operating system maintains the date and time and how to adjust those settings (for example, to allow for daylight-saving time).

- If you want a listing of the images replaced by this update, you can print the following file:

  ```
  $ PRINT SYS$UPDATE:VMS$SPECIAL_VMSU2H4055.DAT
  ```

- Display the free block count on the system disk by entering the following command:

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

- After you have rebooted the updated system disk and any nodes that use the updated system disk (otherwise, do *not* perform this next procedure until you have done so), use the VMSU2H4055-PURGE.COM command procedure to purge files that the update procedure could not purge. For example, to purge files produced by the update, enter the following command:

  ```
  $ @SYS$UPDATE:VMSU2H4055-PURGE
  ```

  You can use the OpenVMS VAX Analyze/Disk_Structure Utility to determine whether the update procedure purged files completely.

- The VMSINSTAL procedure copies the release notes to the file SYS$HELP:VMSU2H4055.RELEASE_NOTES. You can print this file on a line printer or display it at a terminal.

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