

AlphaServer 8200 to 8400 Upgrade Manual

Order Number: EK-T8284-UI. A01

Use this manual as a quick reference to upgrade from an AlphaServer 8200 system to an AlphaServer 8400 system.

**Digital Equipment Corporation
Maynard, Massachusetts**

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Preface

Intended Audience

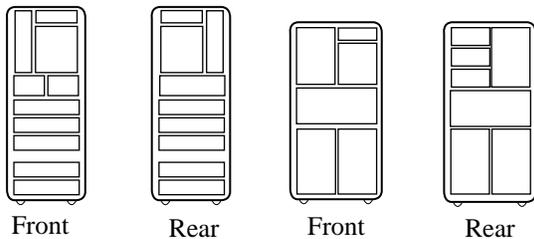
This manual is written for the customer service engineer.

Document Structure

This manual uses a structured documentation design. Topics are organized into small sections for efficient online and printed reference. Each topic begins with an abstract. You can quickly gain a comprehensive overview by reading only the abstracts. Next is an illustration or example, which also provides quick reference. Last in the structure are descriptive text and syntax definitions.

Conventions Used in This Document

Icons. Icons similar to those shown below are used in illustrations for designating part placement in the system described. A shaded area in the icon shows the location of the component or part being discussed.



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Documentation Titles

Table 1 lists the books in the AlphaServer 8400 documentation set.

Table 1 AlphaServer 8400 Documentation

Title	Order Number
Hardware User Information and Installation	
<i>Operations Manual</i>	EK-T8030-OP
<i>Site Preparation Guide</i>	EK-T8030-SP
<i>AlphaServer 8400 Installation Guide</i>	EK-T8430-IN
Service Information Kit	QZ-00RAC-GC
<i>Service Manual</i> (hard copy)	EK-T8030-SV
<i>Service Manual</i> (diskette)	AK-QKNFA-CA AK-QUW7A-CA AK-QUW6A-CA
Reference Manuals	
<i>System Technical Manual</i>	EK-T8030-TM
<i>System Technical Manual Supplement: CPU</i>	EK-T8030-TS
<i>DWLPA and DWLPB PCI Adapter Technical Manual</i>	EK-DWLPA-TM
Upgrade Manuals	
<i>KN7CC CPU Module Installation Card</i>	EK-KN7CC-IN
<i>KN7CD CPU Module Installation Card</i>	EK-KN7CD-IN
<i>KN7CE CPU Module Installation Card</i>	EK-KN7CE-IN
<i>MS7CC Memory Installation Card</i>	EK-MS7CC-IN
<i>KFTHA System I/O Module Installation Card</i>	EK-KFTHA-IN
<i>KFTIA Integrated I/O Module Installation Card</i>	EK-KFTIA-IN
<i>AlphaServer 8400 Upgrade Manual</i>	EK-T8430-UI
<i>BA654 DSSI Disk PIU Installation Guide</i>	EK-BA654-IN
<i>BA655 SCSI Disk and Tape PIU Installation Guide</i>	EK-BA655-IN
<i>DWLMA XMI PIU Installation Guide</i>	EK-DWLMA-IN
<i>DWLPA/DWLPB PCI PIU Installation Guide</i>	EK-DWL84-IN
<i>H7237 Battery PIU Installation Guide</i>	EK-H7237-IN

Table 1 AlphaServer 8400 Documentation (Continued)

Title	Order Number
<i>H7263 Power Regulator Installation Card</i>	EK-H7263-IN
<i>KFMSB Adapter Installation Guide</i>	EK-KFMSB-IN
<i>KZMSA Adapter Installation Guide</i>	EK-KXMSX-IN
<i>RRDCD Installation Guide</i>	EK-RRDRX-IN

Procedure

1 Overview

The upgrade procedure has 10 steps:

1. Check all materials.
2. Prepare the site.
3. Power down the 8200 system
4. Remove the modules from the 8200 TLSB card cage.
5. Remove the clock card from the 8200 TLSB card cage.
6. Install the clock card in the 8400 TLSB card cage.
7. Insert I/O, memory, and terminator modules in the 8400 TLSB card cage.
8. Insert processor modules in the 8400 TLSB card cage.
9. Repeat the next four substeps until all PCI modules and StorageWorks units have been moved from the 8200 to the 8400.
 - a. Remove PCI modules from their 8200 PCI shelves.
 - b. Install PCI modules in 8400 DWLPA/B plug-in units (PIU).
 - c. Remove StorageWorks devices from their shelves in the 8200.
 - d. Insert StorageWorks devices in the 8400, and connect hoses and cables between TLSB I/O modules and PCI buses or StorageWorks devices. Move and connect other I/O devices.
10. Update device firmware and verify the system.

Before You Begin

You might need to install other equipment not included in this upgrade procedure. For KFE70-AA and PCI installation, see the *DLWPA/DWLPA PCI PIU Installation Guide*, EK-DWL84-IN.

2 Check All Materials

Check that the upgrade kit is complete. You will need other materials as well.

Table 2 Upgrade Hardware

Quantity	Part Number	Description
1	75U9A-AC/AD/AE	System option. This upgrade kit contains:
1	H9F00-xx	System cabinet assembly
1	RRDCD-CA	Optical drive assembly
1	DWLPB-AA	PCI plug-in unit
1	BA661-AA	StorageWorks shelf
4	E2034-AA	Terminator modules
1	QZ-00RAB-GZ	AlphaServer 8400 documentation kit
1	EK-T8284-UI	<i>AlphaServer 8200 to 8400 Upgrade Manual</i>
1	36-26123-07	Label for shipping 8200 back to Digital for North America
	36-26123-08	Label for shipping 8200 back to Digital for Europe/AP
1		Sheet, Product ID
	74-50090-04	AlphaServer 8400 5/622
	74-50090-03	AlphaServer 8400 5/440
	74-50090-02	AlphaServer 8400 5/350
	74-50090-01	AlphaServer 8400 5/300

The upgrade kit contains the 8400 cabinet, one DWLPB plug-in unit, and one BA661 StorageWorks shelf. Any additional TLSB modules, PCI/EISA modules, or I/O devices you may desire to expand your system must be ordered separately. See the *Digital Systems and Options Catalog* for more information.

Also, any additional DWLPB PCI PIUs or PCI shelves, and any StorageWorks PIUs or shelves needed for the 8400 must be ordered separately. Also, you must ensure that you have I/O hose cables, cables from KFTIA to StorageWorks shelves, and cables from PCI option modules to I/O devices that are the proper length for your new 8400 configuration.

Other upgrade materials include:

Tools

- Small and large flathead screwdrivers
- Small and large Phillips head screwdrivers

Antistatic bags

- One for each TLSB and PCI/EISA module

Documentation

- AlphaServer 8200 to 8400 Upgrade Manual* (EK-T8284-UI)
- AlphaServer 8400 Documentation Kit* (QZ-00RAB-GZ)

Operating system

- OpenVMS
- Digital UNIX
- Windows NT Server

NOTE: Since you are moving from a working system, keep the existing configuration. Keep the same I/O cable connections to adapter modules, adapter connections to devices, and keep StorageWorks device numbering by keeping the same position of the device in a StorageWorks shelf. If you keep these the same, there will be no need for device reconfiguration.

3 Prepare the Site

Get a hard copy of the 8200 system configuration, note any additional options you may be adding with this upgrade, and calculate power requirements.

Example 1 8200 Show Config Command

```
P08>>> show config
      Name                               Type      Rev  Mnemonic
-----
TLSB
4++   KN7CE-AB                           8014      0000  kn7ce-ab0
5++   KN7CE-AB                           8014      0000  kn7ce-ab1
6+    MS7CC                               5000      0000  ms7cc0
7+    MS7CC                               5000      0000  ms7cc1
8+    KFTIA                               2020      0000  kftia0

C0 Internal PCI connected to kftia0
      Name                               Type      Rev  Mnemonic
-----
0+    ISP1020                             10201077  0001  isp00
1+    ISP1020                             10201077  0001  isp01
2+    DECchip 21040-AA                    21011    0023  tulip0
3+    DEC PCI FDDI                        F1011    0000  pfi0
4+    ISP1020                             10201077  0001  isp02
5+    ISP1020                             10201077  0001  isp03
6+    DECchip 21040-AA                    21011    0023  tulip1
7+    PCI NVRAM                           71011    0000  pci_nvram0
C1 PCI connected to kftia0
      Name                               Type      Rev  Mnemonic
-----
0+    SIO                                 4828086  0003  sio0

      Controllers on SIO
      Name                               Type      Rev  Mnemonic
-----
0+    DECchip 21040-AA                    21011    0023  tulip2
1+    FLOPPY                              2        0000  floppy0
2+    KBD                                  3        0000  kbd0
3+    MOUSE                                4        0000  mouse0

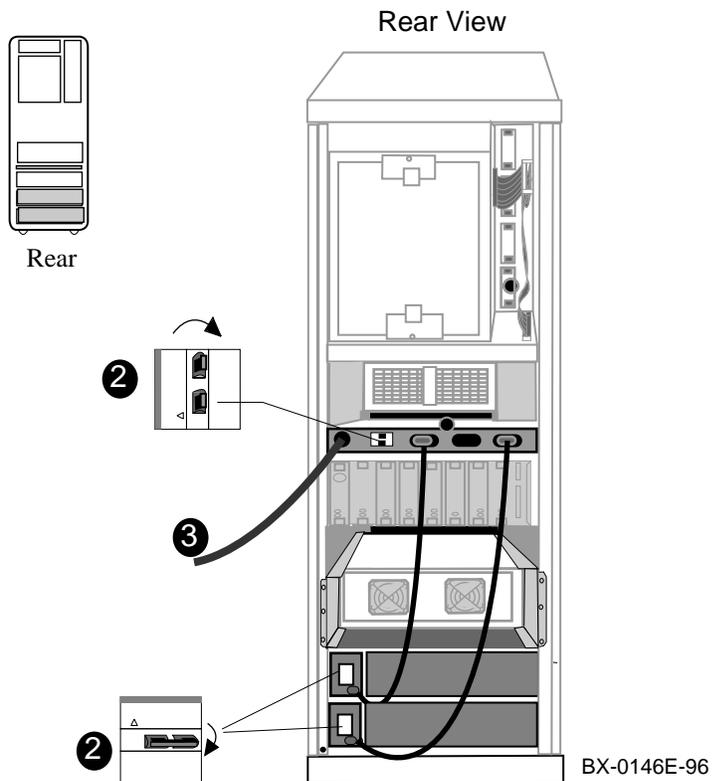
      EISA connected to pci1 through sio0
      Name                               Type      Rev  Mnemonic
-----
3+    KFESB                               2EA310   0000  eisa0
P08>>>
```

1. Shut down the operating system and issue the console commands **show configuration**, **show device**, and **show <envar>** to show the system configuration and environment variables. Keep a hard copy of the output for reference. Note any new options being added for this upgrade.
2. If the power requirements of the upgraded system have not already been calculated, do so now to determine the number of power regulators required. See the AlphaServer 8400 Power Configuration Table in the *Digital Systems and Options Catalog*.
3. The 8400 in the upgrade kit has one H7263 regulator. If another is needed to meet the power requirements of the upgraded system, make sure it is added before proceeding with the upgrade.
4. Since individual configurations vary, the 8400 in the upgrade kit is supplied with only one DWLPB-AA and one BA661-AA StorageWorks shelf. Make sure that you have sufficient plug-in units, shelves, and the proper length I/O cables to meet your needs before proceeding with the upgrade.

4 Power Down the 8200 System

Turn off power to the 8200 system.

Figure 1 8200 System Circuit Breakers (shown with redundant power supply)

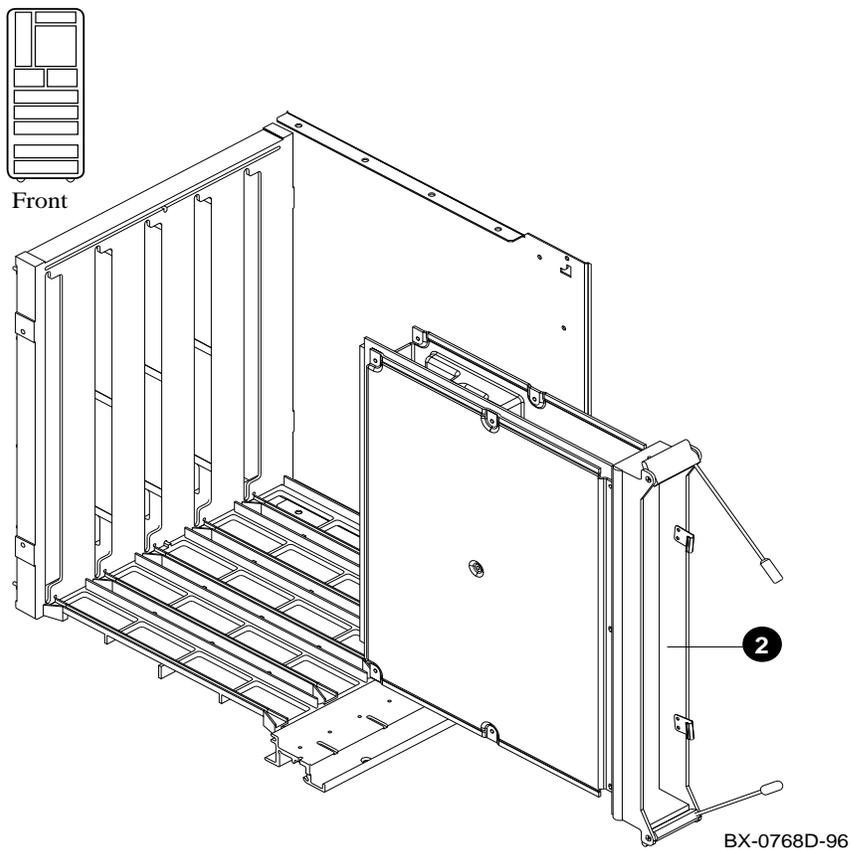


1. With the system in console mode, depress the pushbutton on the control panel to the Off position (out).
2. Open the rear door of the cabinet, and,
 - If the system has two power regulators, push both breakers on the power strip (in the middle of the cabinet) to the right.
 - If the system has one power regulator, push the handle down on the circuit breaker (at the bottom of the cabinet) (see ❷ in Figure 1).
3. Unplug the power cord from the power strip or from the regulator (see ❸).

5 Remove the Modules from the 8200 TLSB Card Cage

Put on an antistatic wrist strap, remove all TLSB modules, and place them in antistatic bags.

Figure 2 Removing Modules from the TLSB Card Cage



Tools required: small and large flathead screwdrivers

1. Ground yourself to the cabinet with the antistatic wrist strap.
2. Remove each processor and memory module by pushing the handles of the module in toward the module end plate and to the left, releasing them from the stops. Grasp the end plate and slide the module out of the card cage. See ❷ Figure 2. Place each module in an antistatic bag as it is removed from the card cage. Remove any filler modules.
3. At the rear of the cabinet, use the small flathead screwdriver to disconnect all I/O cables from KFTIA and KFTHA modules. See ❸ in Figure 3. Label each hose with the connector number from which it is being detached. Figure 4 shows the connector (C0, C1, etc.) numbering scheme. A KFTIA's internal PCI bus will take the topmost number for a given slot, and its hose connector will take the next number. The bottom two numbers are associated with the slot, even though nothing will ever occupy them on a KFTIA. The KFTHA has four hose connectors, numbered in increasing order from top to bottom.
4. Remove the KFTIA and KFTHA modules using the procedure in step 2.

Figure 3 Removing I/O Cables

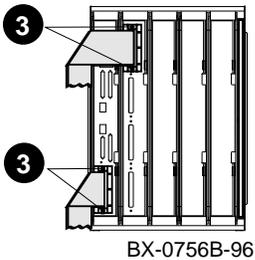
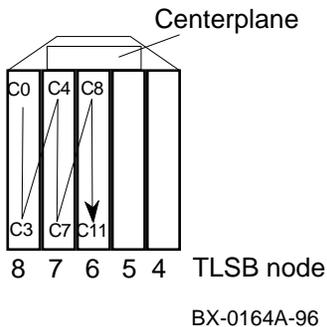


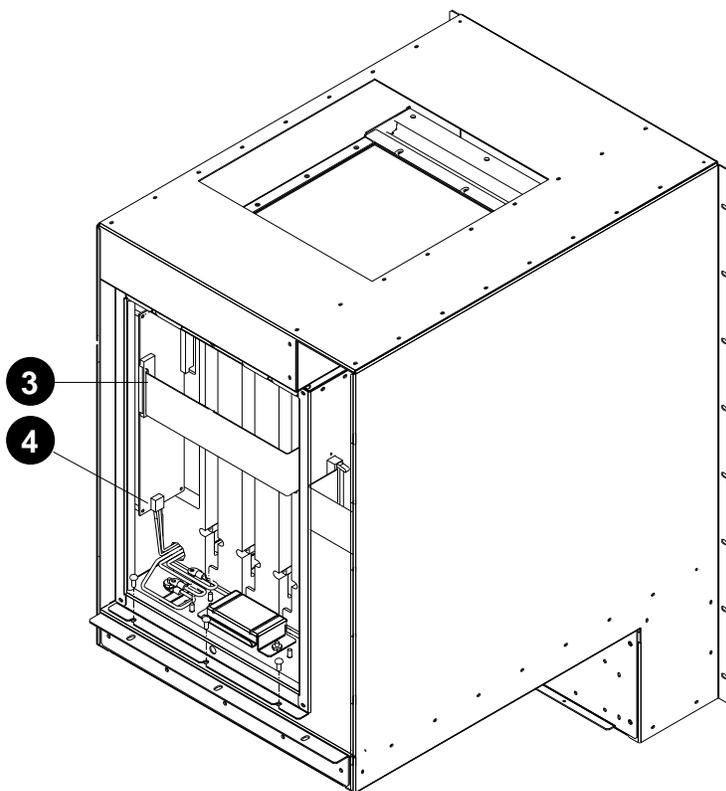
Figure 4 Hose Numbering Scheme for KFTIA and KFTHA



6 Remove the Clock Card from the 8200 TLSB Card Cage

The clock module is attached to the TLSB card cage by two Phillips screws. Access is from the rear of the cabinet.

Figure 5 Removing the Clock Module from the 8200



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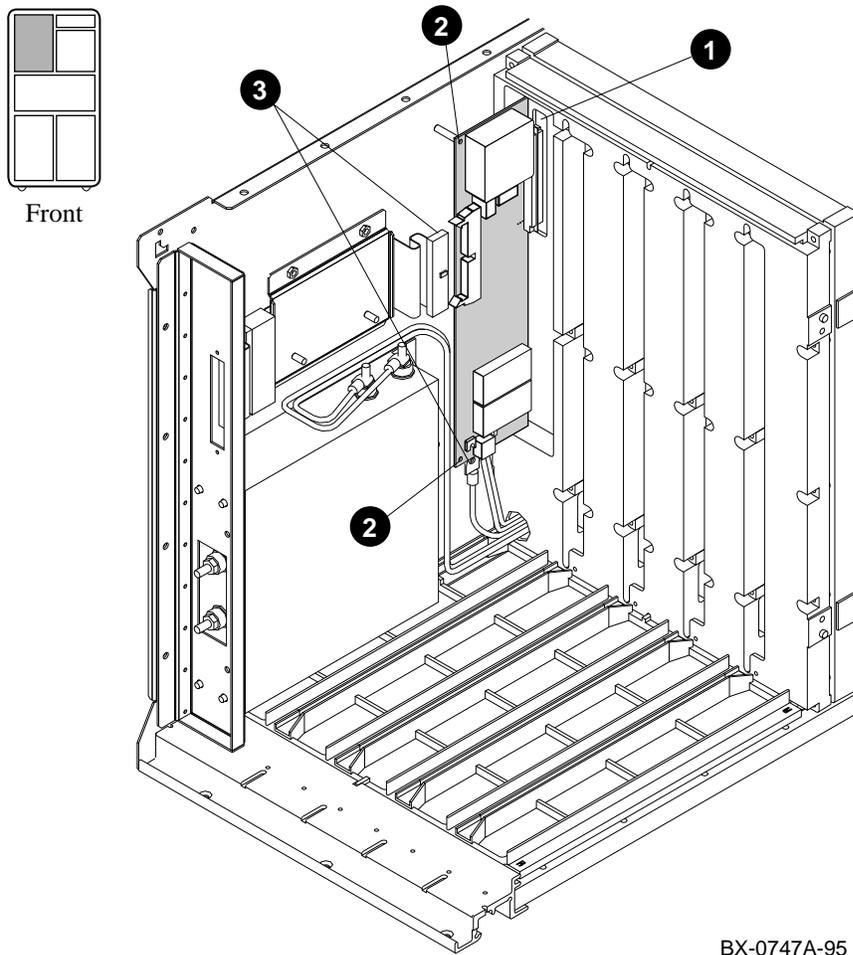
To remove the clock card from the 8200:

1. Remove the rear door by loosening the two bolts at the bottom of the cabinet and lifting the door off the two brackets.
2. Remove the TLSB card cage cover by loosening the two captive screws.
3. Disconnect the CCL cable from the clock module (see ❸).
4. Disconnect the power cable from the clock module (see ❹).
5. Remove the two small Phillips screws that secure the clock module to the card cage. Keep the screws to use for the clock card when installed in the 8400, should they be needed.
6. Remove the clock module.

7 Install the Clock Card in the 8400 TLSB Card Cage

The clock card is located behind the power filter. It is attached with two Phillips screws, and power and CCL cables are connected to it. You will need a Phillips screwdriver.

Figure 6 Installing the System Clock Card



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Tools required: Phillips screwdriver

1. Insert the clock card in the centerplane connector. See ❶ in Figure 6.
2. Fasten the clock card in place with two Phillips screws. See ❷. (Use the two screws from the 8200 if necessary.)
3. Connect the power and CCL cables. (The connectors are keyed.) See ❸.

Tools required: small flathead screwdriver

1. Before installing the modules, determine their placement:
 - a. Processor modules start at slot 0 and work up.
 - b. The KFTIA and KFTHA I/O modules (up to three) must be contiguous and begin in slot 8.
 - c. The first MS7CC memory module is in the highest-numbered open slot, the next in the lowest-numbered open slot, and so on, alternating between highest- and lowest-numbered open slots. (If one or more memory modules are to be installed in slots 1–4, wait until processor modules have been installed to be able to follow the “left to right” rule.)
 - d. Terminator modules (E2034–AA) go in all other slots. Four are supplied with the upgrade kit; any others needed are transferred from the 8200.
10. Ground yourself to the cabinet with the antistatic wrist strap.
11. Insert the I/O, memory, and terminator modules (if any) in the TLSB card cage. (You will insert the processor modules in the procedure on the next page.)

CAUTION: To avoid damaging an EMI gasket, insert modules from left to right. These gaskets can easily break, and a broken piece of gasket can damage a module or the centerplane.

- a. Remove each module from its antistatic bag and release the spring-loaded handles from the stops. To do this, push both handles toward the module endplate and away from the stops.
 - b. Hold the module assembly by the endplate. Align the module with the card guide and the cover with the rail (see Figure 7).
 - c. Slide the module into the card cage as far as it will easily go.
 - d. When the module stops, check that the projections on the top and bottom of the endplate are aligned with the slots in the card cage. If they are not, remove the module and realign it.
 - e. Push both handles at the same time to the module endplate. You will feel the module make contact with the connectors at the centerplane. Release the handles so they spring back into the stops.
12. Attach the I/O cables to the KFTIA and KFTHA modules.

9 Insert Processor Modules in the 8400 TLSB Card Cage

Insert processor modules one at a time and update console firmware if necessary. After all have the same version of the firmware, insert all processor modules.

Example 2 Inserting Processor Modules

```

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
                                A   M   .   .   .   .   .   .   P   TYP
                                o   +   .   .   .   .   .   .   ++  ST1
                                .   .   .   .   .   .   .   .   EB  BPD
                                o   +   .   .   .   .   .   .   ++  ST2
                                .   .   .   .   .   .   .   .   EB  BPD
                                +   +   .   .   .   .   .   .   ++  ST3
                                .   .   .   .   .   .   .   .   EB  BPD

                                .   .   .   .   .   .   .   .   C0
                                .   .   .   .   .   .   .   .   C1
                                .   .   .   .   .   .   .   .   C2
                                .   .   .   .   .   .   .   .   C3

                                .   A0   .   .   .   .   .   .   ILV
                                . 2GB   .   .   .   .   .   .   2GB
AlphaServer 8400 Console V4.04, SROM V3.9, Dec 5 1996 16:17:26
P00>>> boot dkd4005
        [LFU boots]
UPD> update kn7ce*
Confirm update on:
kn7ce-ab0
[Y/(N)]y
WARNING: updates may take several minutes to complete for each device.
        DO NOT ABORT!
kn7ce-ab0      Updating to 4.1-32... Verifying 3.2-32... PASSED.
UPD> exit
Initializing...
        [self-test display appears]
P00>>> build -e kn7ce-ab0
Build EEPROM on kn7ce-ab0 ? [Y/N]> y
        EEPROM built on kn7ce-ab0
P00>>>

```

If the system has more than one processor module, or you are adding additional CPU modules, the modules shipped might have different versions of console firmware. Results are unpredictable if you install all processor modules at the same time and power up the system, so install each module individually and update the console firmware on each if necessary.

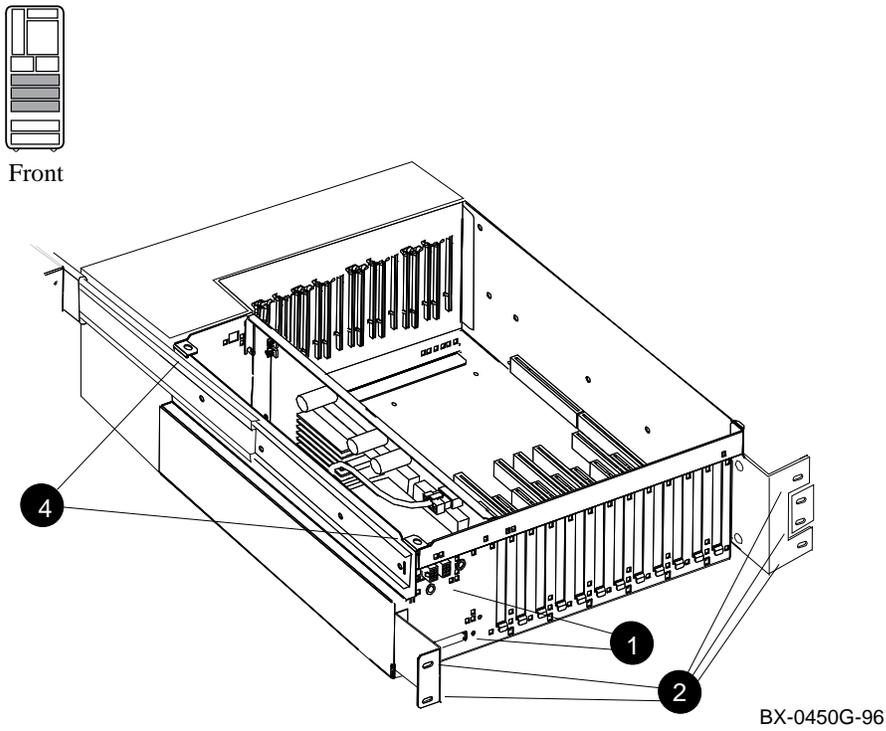
If the system has just one processor module, do only the first five steps of the following procedure.

1. Insert a processor module in slot 0. (At least one memory module must have been installed. The system will not power up if there is not at least one memory in the TLSB card cage.)
2. Unlock the lockout plate on the 8400 circuit breaker, if necessary, and push the system circuit breaker of the 8400 up. The indicators turn to red.
3. Power up the system by turning on the keyswitch. The console self-test runs.
4. Check the version of console firmware in the processor module. See ④ in Example 2.
5. If the firmware is not the latest version, update it using LFU (see ⑤). Then exit LFU and build the EEPROM.
6. Power down the system.
7. If more than one processor is to be installed, remove the just-updated processor from slot 0. Repeat steps 1 and 3 through 6 for each processor module in the system.
8. After the console firmware has been updated on all processor modules, install all of them, following guidelines on page 15. Leave the system powered down, using the lockout padlock on the circuit breaker to ensure power remains off while you return to the 8200.

10 Remove PCI Modules from the 8200 PCI Shelves

Go back to the 8200. Slide out one PCI shelf at a time and remove modules for transfer to the 8400.

Figure 8 Removing PCI Modules from 8200 System



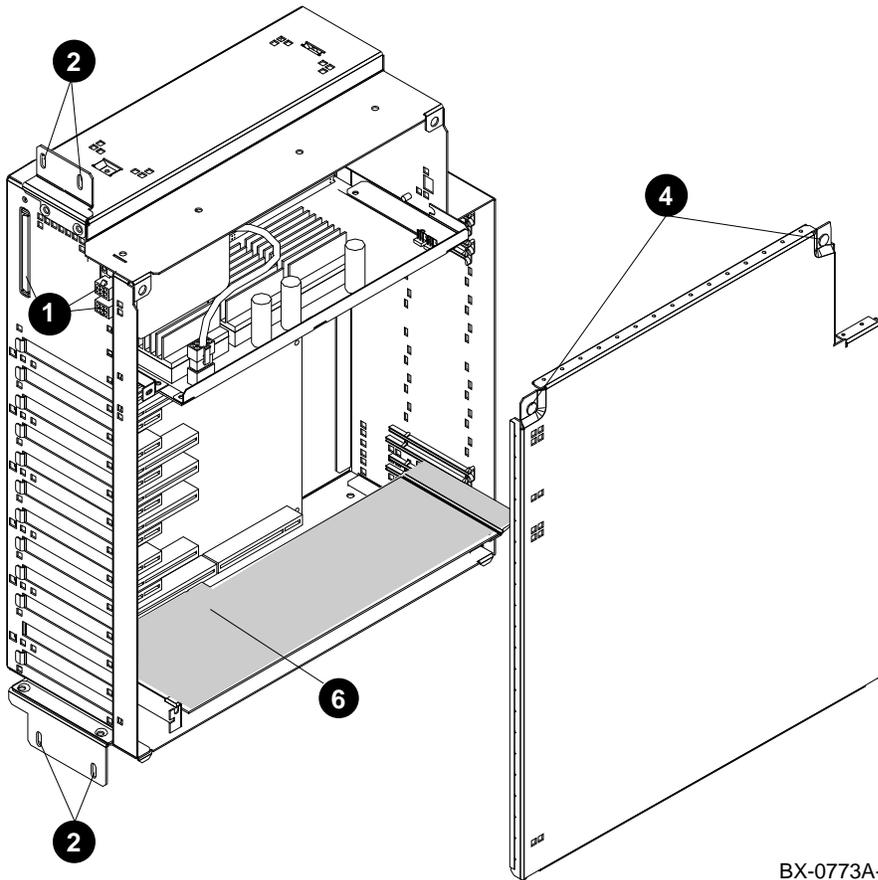
Move the contents of one PCI card cage at a time from the 8200 to the 8400. This makes it easier to maintain the KFTIA/KFTHA hose number connections, to eliminate device reconfiguration. Likewise, transfer the I/O devices connected to the adapters from one PCI card cage at the same time.

1. Disconnect the power cables, ❶ in Figure 8, the I/O hose cable, and any other cables that prevent the PCI shelf from being pulled out. Keep the hose cable with the adapters you remove from the shelf, so that when you transfer the adapters the hose number connections remain the same. (Remember that you labeled the hoses when removing them from the KFTIA/KFTHAs, as described on page 9.)
2. Remove the five Phillips head screws that hold the card cage and the cable management rack to the frame (see ❷).
3. Pull the shelf out fully.
4. Remove the top cover by loosening the two quarter-turn screws, lifting the top of the cover away from the card cage, and then pulling the cover to the right and off (see ❸).
5. Remove any cables attaching I/O devices to the PCI from the front of PCI option cards. Label each adapter and each shelf or I/O device to which it is connected, for reinstallation in the 8400.
6. Note the slot number from which the option is being moved. Lift each PCI option from its slot carefully, and place it in an antistatic bag. Label the bag with the slot number. Also label the bag to indicate the shelf or device to which it was attached, and label the I/O device(s) to show which devices belong to each option.
7. When all PCI option cards have been removed from one shelf, reattach the top cover and slide it back into the cabinet. Reattach the mounting screws.
8. Move the PCI option cards and the I/O cables to the 8400. Proceed to the next page.

11 Install PCI Modules in the 8400

Transfer the PCI modules removed from the 8200 to the 8400.

Figure 9 Installing PCI Modules in 8400 System



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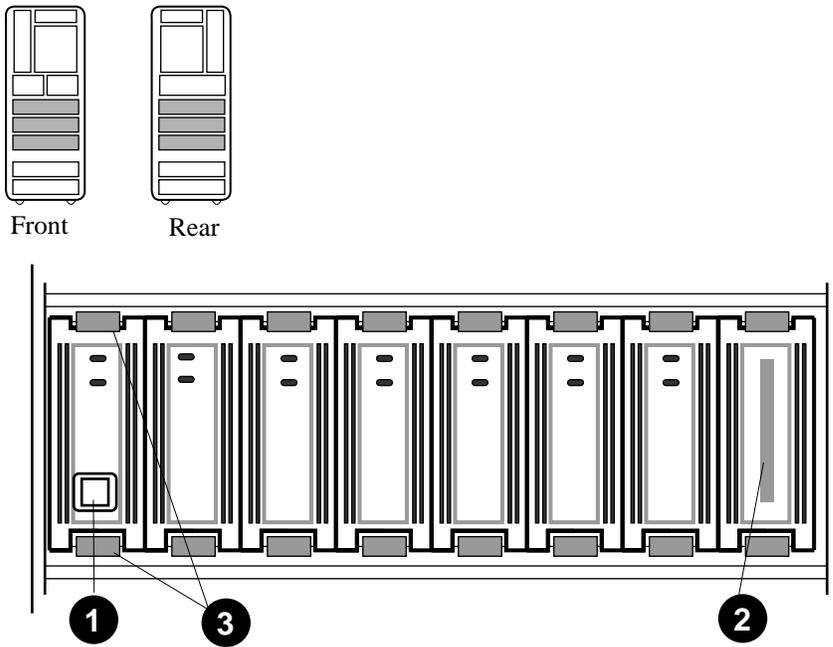
We assume here that the DWLPB PIUs have been installed in the 8400 system, and that any extra PCI shelves have been installed as necessary, as described in the *DWLPA/DWLPB PCI PIU Installation Guide* (EK-DWL84-IN).

1. Disconnect any power cables (see ❶ in Figure 9), that will prevent the PCI shelf from being pulled out.
2. Remove the four Phillips head screws that hold the shelf in the PIU. See ❷.
3. Slide the shelf out until the slides lock.
4. Remove the side cover by loosening the two quarter-turn screws that hold the shelf in place, tilting the top of the cover away from the shelf and then lifting the cover off the shelf (see ❹).
5. Remove the face plates from any slots you plan to use for PCI or EISA options. The face plates are held in place by a Phillips head screw on the inside right front edge of the card cage.
6. Insert the option boards (see ❺).
7. Attach the hose I/O cable to the proper KFTIA/KFTHA connector (remember that you labeled them, as described on page 9), and to the PCI card cage whose contents you just transferred.
8. Proceed to the next page.

12 Remove StorageWorks Devices from the 8200

Remove StorageWorks power supplies, devices, and DWZZA/Bs from the 8200 StorageWorks shelves.

Figure 10 Removing SCSI Devices from 8200 System



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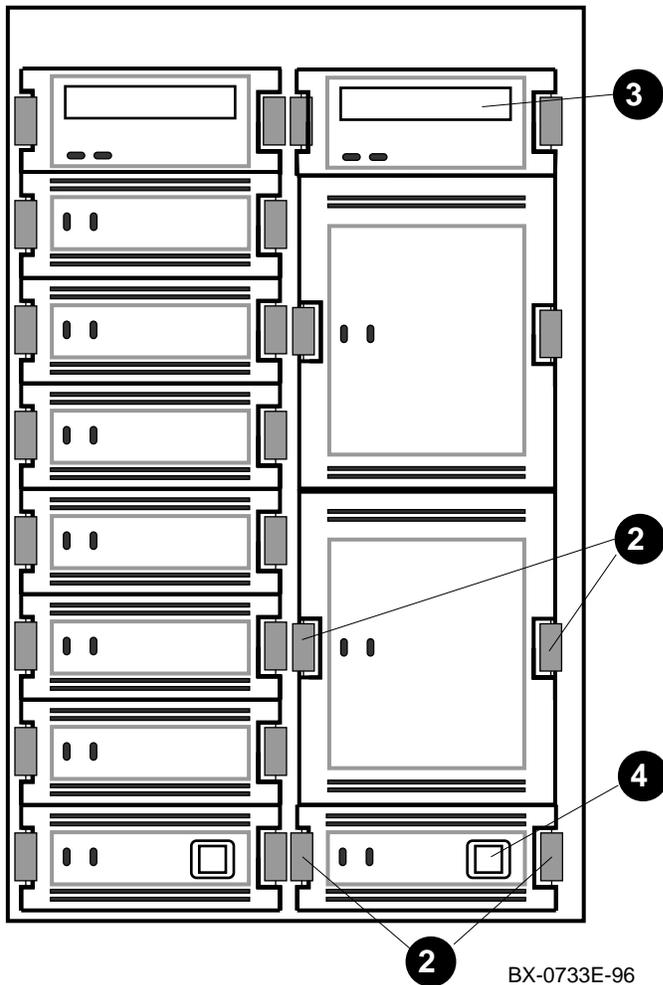
To remove SCSI devices from StorageWorks shelves:

1. Disconnect the input power cord from the power supply. See ❶ in Figure 10.
2. Unplug the I/O cable from the shelf (see ❷).
3. Mark the position of each disk in the shelf, so that all disks can be restored with the same unit numbers in the 8400. Remove power supply, DWZZA/Bs, and I/O devices by pressing in both mounting tabs (see ❸). Using both hands to support the weight, slide each unit out of the shelf.

13 Insert StorageWorks Devices in 8400, Move Other Devices and Controllers

Insert the StorageWorks devices just removed from the 8200 in the 8400 DWLPB or SCSI PIUs in the 8400. Connect the appropriate I/O cables.

Figure 11 Inserting SCSI Devices in 8400 PIUs



To install the SCSI I/O devices in the 8400:

1. Make sure that the shelf the devices are being placed in can be connected to the same numbered hose connector as in the 8200.
2. Insert the devices in the same places in the 8400 shelf that they occupied in the 8200 shelf. (The left side of the 8200 shelf corresponds to the bottom of the 8400 shelf.) Press in on the mounting tabs (see ❷ in Figure 11), and using the other hand to support the unit, slide the unit into the shelf until it connects.
3. Reconnect the I/O cable to the shelf and to the PCI adapter to which it was originally connected (see ❸). (Remember that you labeled adapters and devices for reconnection.)
4. Connect the power supply cord (see ❹).
5. Move any other I/O devices or external controllers from the 8200 to the 8400 and cable them.
6. Return to page 19 to work on the next PCI card cage, and repeat the steps from there to this page until all adapters and devices have been transferred from the 8200 to the 8400.

14 Update Device Firmware and Verify the System

Turn on the system and boot LFU. Update firmware for adapters and run the test command. Boot the operating system.

Example 3 Updating Firmware and Verifying the System

```
P00>>> boot dkd400          ❷
      .
      .
      .
Bootfile: [alpha8x00]as8000_v09.exe
          [LFU boots]
UPD> update
confirm update on:
          [list of devices]
[Y/(N)]y
P00>>> test          ❸
          [test for all system devices appears]
P00>>> boot
```

1. Power up the system and check that all modules are listed in the self-test display. Also check that the LEDs on all modules light.
2. At the console prompt, boot LFU from the Alpha Systems Firmware Update CD-ROM and update the firmware on all devices. See ❷.
3. Run console diagnostics with the **test** command. See ❸.
4. Boot the operating system.
5. Pack the 8200 cabinet and shelves in a shipping box and return to Digital, using the shipping label supplied.

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