COMPAQ

AlphaServer ES40

Model 1 to Model 2 Upgrade

Order Number: EK–ES4M2–UP. A01

This guide is intended for service providers and self-maintenance customers who are upgrading a *Compaq AlphaServer* ES40 system.

Compaq Computer Corporation

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被要求採取某些適當的對策。

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Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Any modifications to this device—unless expressly approved by the manufacturer—can void the user's authority to operate this equipment under part 15 of the FCC rules.

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Preface

Intended Audience

This manual is for service providers and self-maintenance customers who are upgrading a *Compaq AlphaServer* ES40 system from a Model 1 to a Model 2.

Document Structure

This manual uses a structured documentation design. Topics are organized into small sections, usually consisting of two facing pages. Most topics begin with an abstract that provides an overview of the section, followed by an illustration or example. The facing page contains procedures.

This manual has two chapters.

Chapter 1, Preparing to Upgrade, lists the contents of the upgrade kit and lists steps to take before performing the upgrade.

Chapter 2, Performing the Upgrade, gives instructions on replacing the memory motherboards and the PCI backplane.

Documentation Titles

Table 1 Compaq AlphaServer ES40 Documentation

Title	Order Number
User Documentation Kit	**QZ-6E88A-G8**
Owner's Guide	EK-ES240-UG
User Interface Guide	EK-ES240-UI
Tower and Pedestal Basic Installation	EK-ES240-PD
Release Notes	EK-ES240-RN
Documentation CD (6 languages)	AG-RF9HA-BE
Maintenance Kit	**QZ-01BAB-GZ**
Service Guide	EK-ES240-SV
Illustrated Parts Breakdown	EK-ES240-IP
Loose Piece Items	
Rackmount Installation Guide	EK-ES240-RG
Rackmount Installation Template	EK-ES4RM-TP
ES40 DIMM Information Sheet	EK-MS610-DM
ES40 Model 2 to Model 2 Upgrade	EK-ES4M2-UP

Support Resources

Support resources for this system are available on the Internet, including a supported options list, firmware updates, and patches.

http://www.digital.com/alphaserver/technical.html

Chapter 1
Preparing to Upgrade

This document explains how to upgrade from a *Compaq AlphaServer ES40* Model 1 system to a Model 2 system. The upgrade increases the system's memory capacity and I/O capacity.

3X-KFPPA-AA Upgrade Kit

The 3X-KFPPA-AA upgrade kit contains the following components:

Component	Part Number	Quantity
10-slot PCI backplane	54-30156-01	1
8-slot memory motherboard	54-25582-01	4

Installation Tools

The upgrade requires the following tools:

- Phillips #2 screwdriver (a magnetic screwdriver is recommended)
- Allen wrench (3 mm)
- Anti-static wrist strap

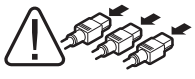
1.1 Preparing to Upgrade

Before performing the upgrade, shut down the system and remove power.

Observe the warnings below and perform the following actions before beginning the upgrade:

1. Shut down the operating system according to the instructions in the operating system documentation.
2. Shut down power on all external devices connected to the system.
3. Shut down power to the system.
4. Unplug the power cord from each power supply.

WARNING: To prevent injury, access is limited to persons who have appropriate technical training and experience. Such persons are expected to understand the hazards of working within this equipment and take measures to minimize danger to themselves or others. These measures include:
1. Remove any jewelry that may conduct electricity.
2. When accessing the system card cage, power down the system and wait 2 minutes to allow components to cool.
3. Wear an anti-static wrist strap when handling internal components.



WARNING: To prevent injury, unplug the power cord from each power supply before installing components.

Chapter 2
Performing the Upgrade

The following steps are required to perform the upgrade:

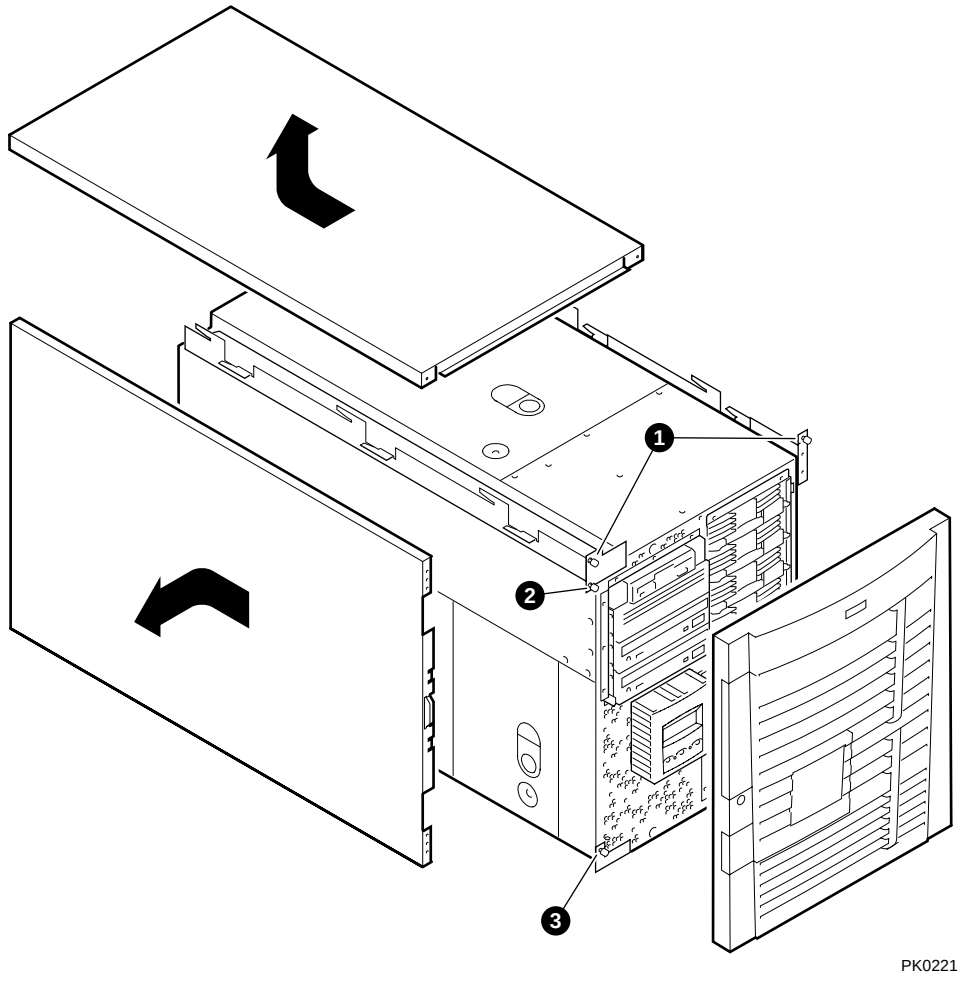
- Replacing the 4-slot memory motherboards (MMBs) with the 8-slot MMBs
- Replacing the 6-slot PCI backplane with the 10-slot PCI backplane

The procedures are on the following pages.

1.1 Removing Enclosure Panels

Open and remove the front door. Loosen the captive screws that allow you to remove the top and side panels.

Figure 2–1 Enclosure Panel Removal (Tower)

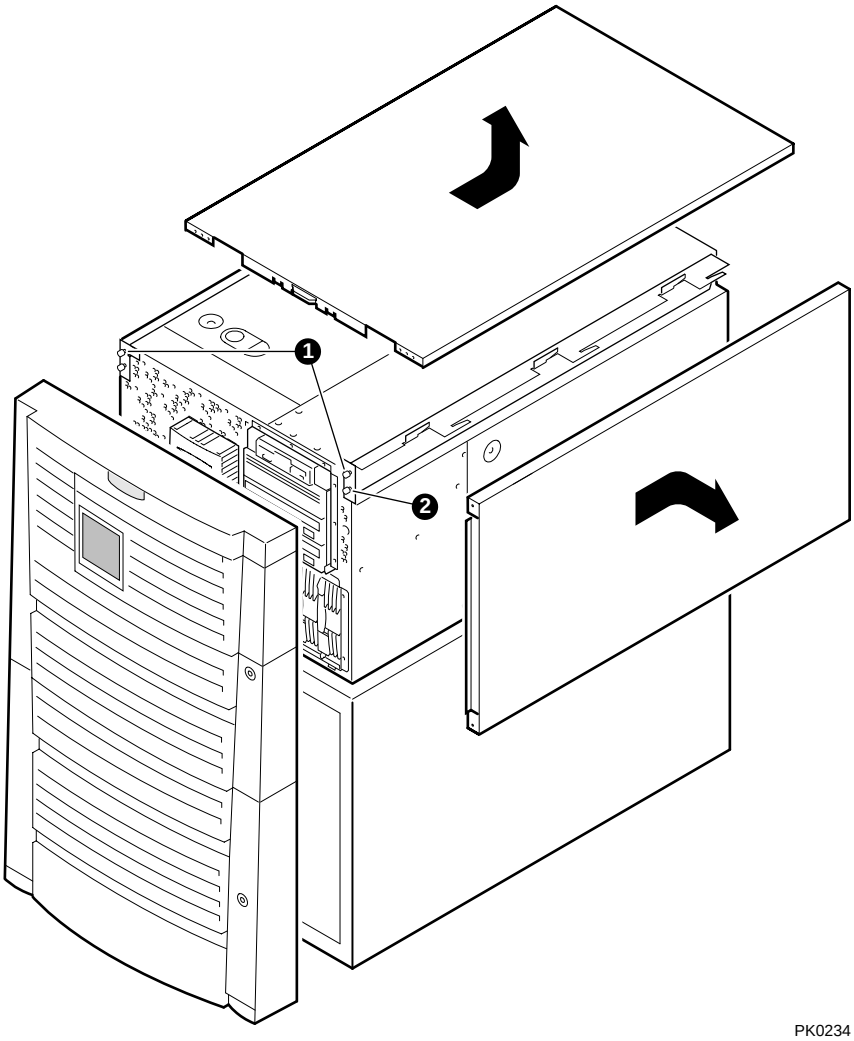


To Remove Enclosure Panels from a Tower

The enclosure panels are secured by captive screws.

1. Remove the front door.
2. To remove the top panel, loosen the top left and top right captive screws ❶. Slide the top panel back and lift it off the system.
3. To remove the left panel, loosen the captive screw ❷ at the top and the captive screw ❸ at the bottom. Slide the panel back and then tip it outward. Lift it off the system.
4. Go to Section 2.2 for instructions on removing covers from the system chassis.

Figure 2–2 Enclosure Panel Removal (Pedestal)



To Remove Enclosure Panels from a Pedestal

The enclosure panels are secured by captive screws.

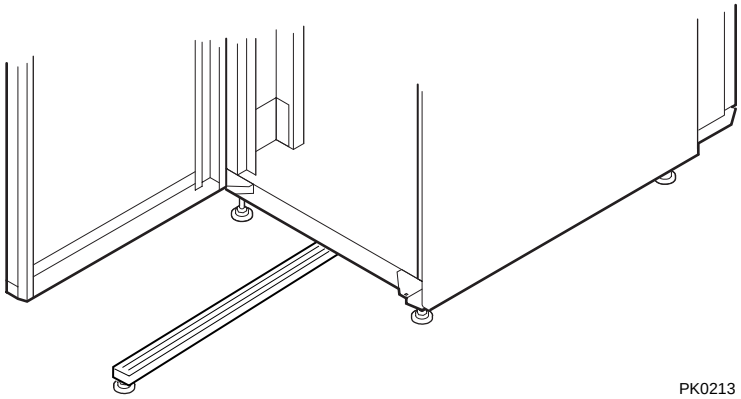
1. Open and remove the front doors.
2. To remove the top enclosure panel, loosen the top left and top right captive screws ❶. Slide the top panel back and lift it off the system.
3. To remove the right enclosure panel, loosen the captive screw shown in ❷. Slide the panel back and then tip it outward. Lift the panel from the three tabs.
4. Go to Section 2.2 for instructions on removing covers from the system chassis.

2.1 Accessing a Rackmount System

In a rackmount system, the system chassis is mounted to slides.

WARNING: Pull out the stabilizer bar and extend the leveler foot to the floor before you pull out the system. This precaution prevents the cabinet from tipping over.

Figure 2–3 Stabilizer Bar and Leveler Foot

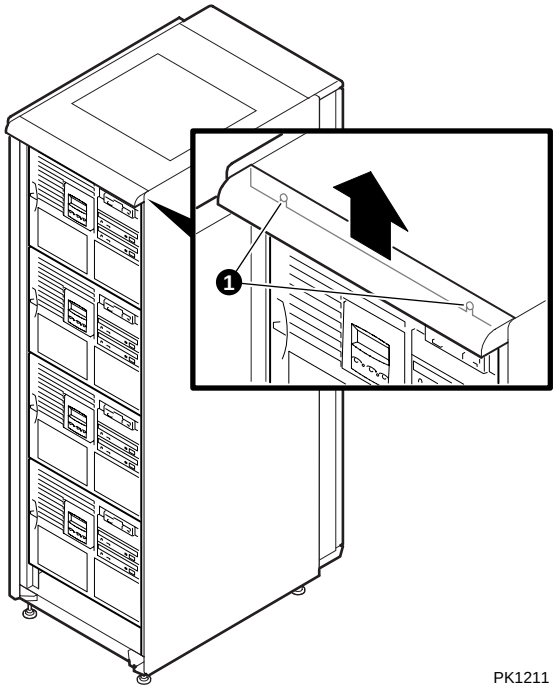


To Gain Access to the System

1. Open the front door of the cabinet.
2. Pull out the stabilizer bar at the bottom of the cabinet until it stops. See Figure 2–3.
3. Extend the leveler foot at the end of the stabilizer bar to the floor.
4. Snap out the front bezel.
5. Remove and set aside the two screws, one per side (if present), that secure the system to the cabinet.
6. Pull the system out until it locks.

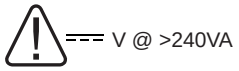
NOTE: *In a 4-system H9A10 cabinet, remove the top overhang bezel by loosening the two screws* ❶.

Figure 2–4 H9A10 Overhang Bezel



2.2 Removing Covers from the System Chassis

WARNING: To prevent injury, access is limited to persons who have appropriate technical training and experience. Such persons are expected to understand the hazards of working within this equipment and take measures to minimize danger to themselves or others.



WARNING: High current area. Currents exceeding 240 VA can cause burns or eye injury. Avoid contact with parts or remove power prior to access.

WARNING: Contact with moving fan can cause severe injury to fingers. Avoid contact or remove power prior to access.

Figure 2–5 and Figure 2–6 show the location and removal of covers on the tower and pedestal/rackmount systems, respectively. The numbered callouts in the illustrations correspond to the following:

❶ 3mm Allen captive quarter-turn screw that secures each cover.

❷ Spring-loaded ring that releases cover. Each cover has a pull-up ring.

❸ Fan area cover. This area contains the main system fan and a redundant fan.

❹ System card cage cover. This area contains CPUs, memory DIMMs, and memory motherboards (MMBs). To remove the system card cage cover, you must first remove the fan area cover ❸. An interlock switch shuts the system down when you remove the system card cage cover.

❺ PCI card cage cover. This area contains PCI cards, the PCI backplane, and four fans.

Figure 2–5 Removing Covers from a Tower

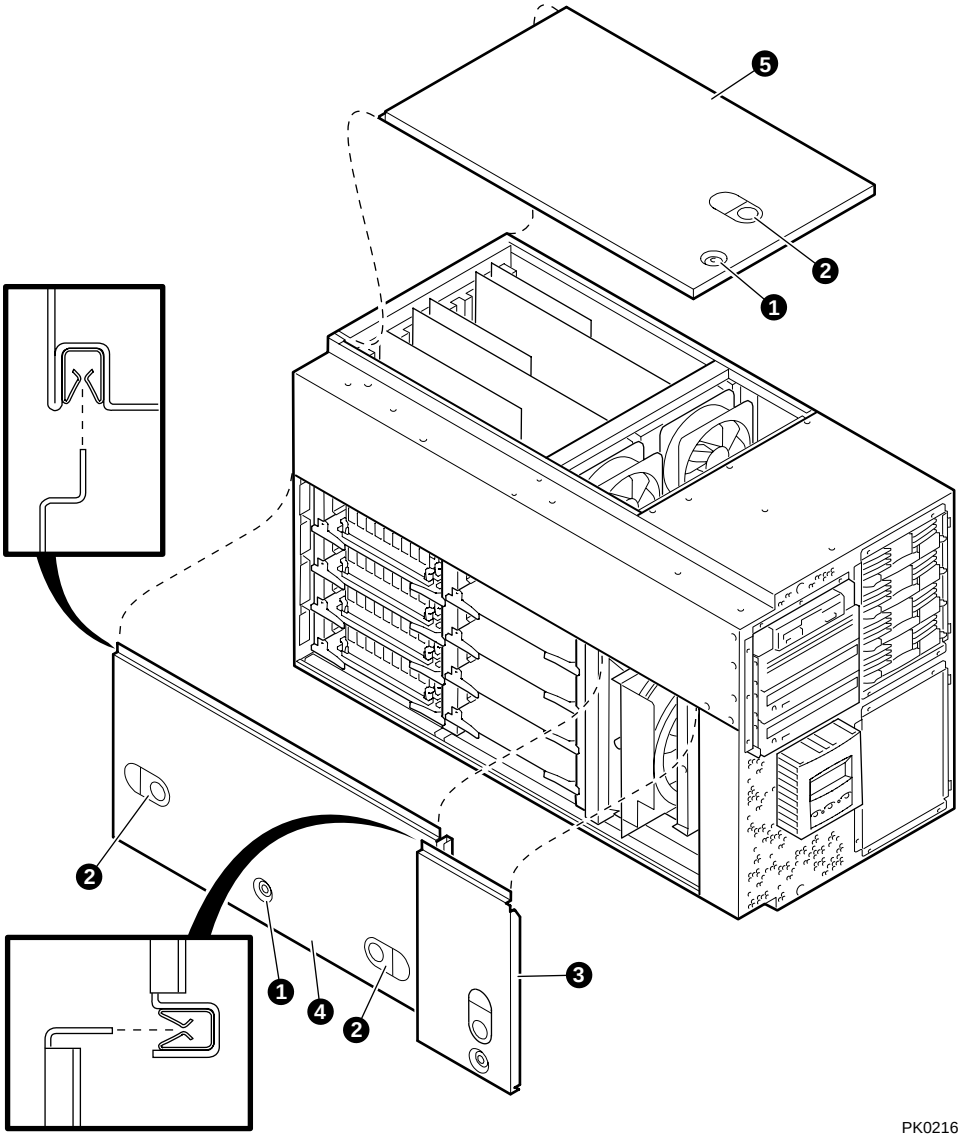
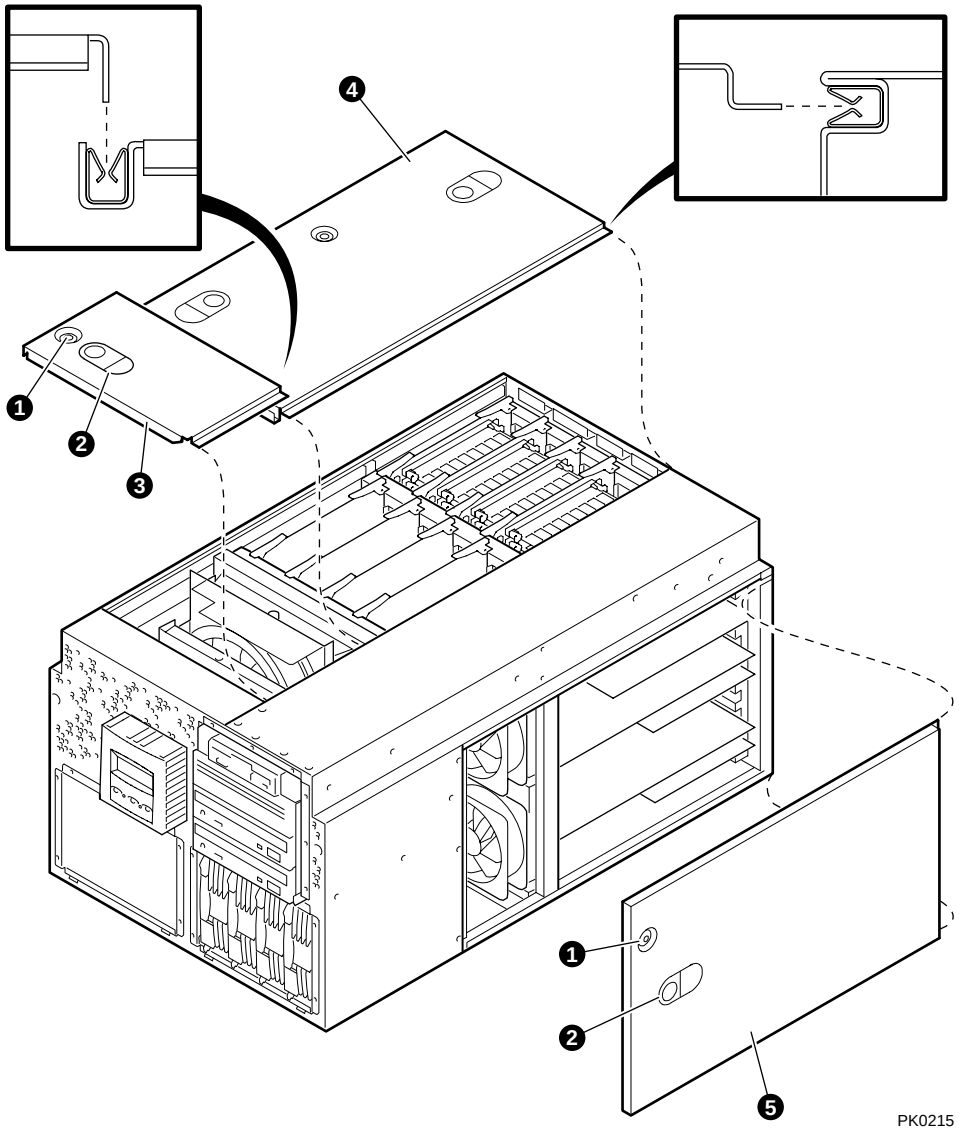
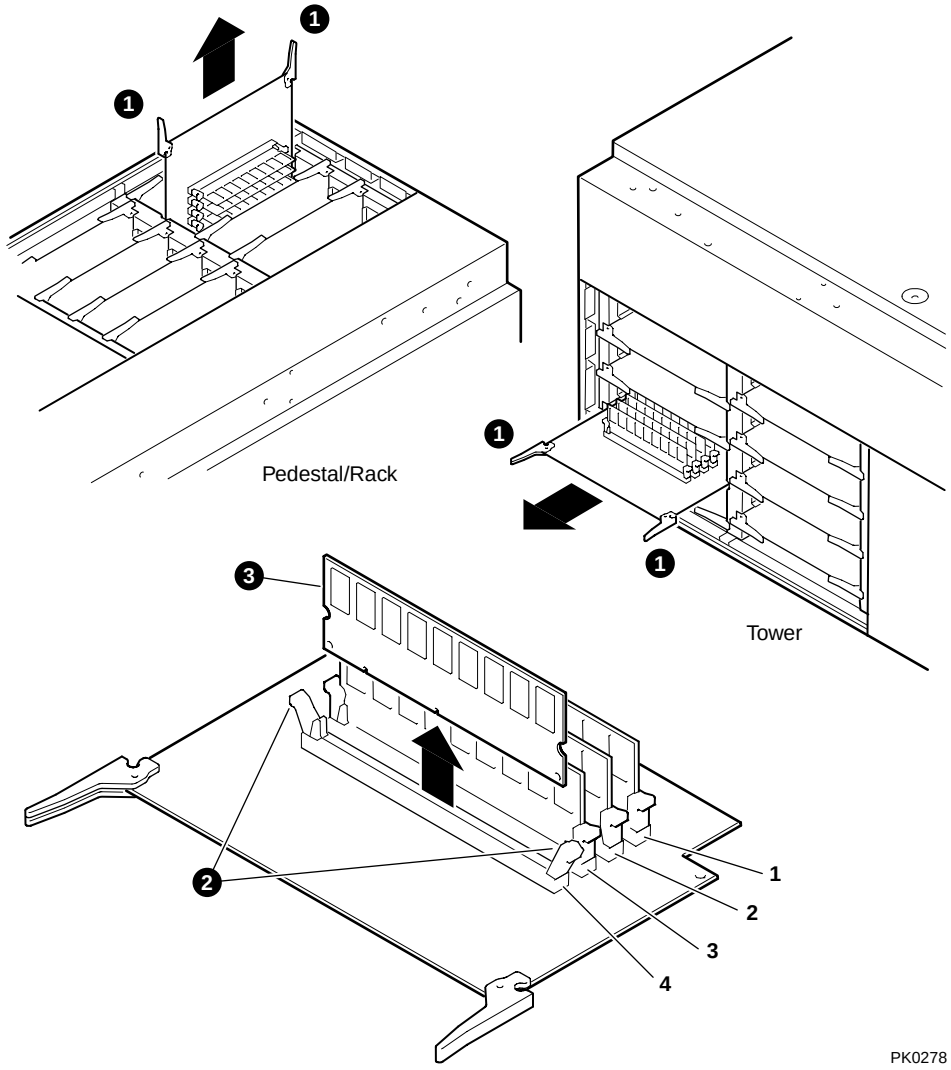


Figure 2–6 Removing Covers from a Pedestal/Rack



2.3 Replacing the Memory Motherboards (MMBs)

Figure 2–7 Removing MMBs and DIMMs



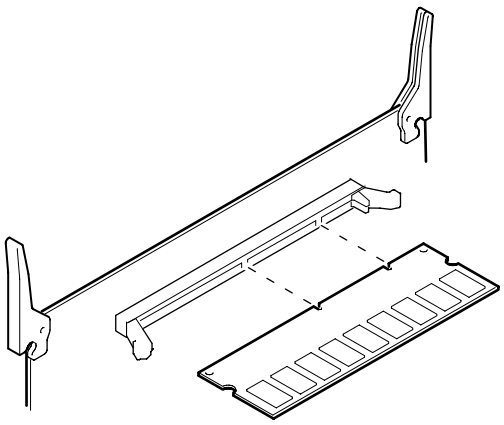
1. Remove the fan cover and the system card cage cover.
2. Release the clips ❶ securing the 4-slot MMB and slide out the MMB.
3. Release the clips ❷ securing the DIMMs ❸ and remove the DIMMs from the MMB.

NOTE: *Be sure to record the position of DIMMs for reinstallation.*

---

4. Install the DIMMs into the 8-slot MMBs in the same positions as in the old MMBs. Align the notches on the gold fingers with the connector keys as shown in Figure 2–8.

Figure 2–8 Aligning DIMM in MMB

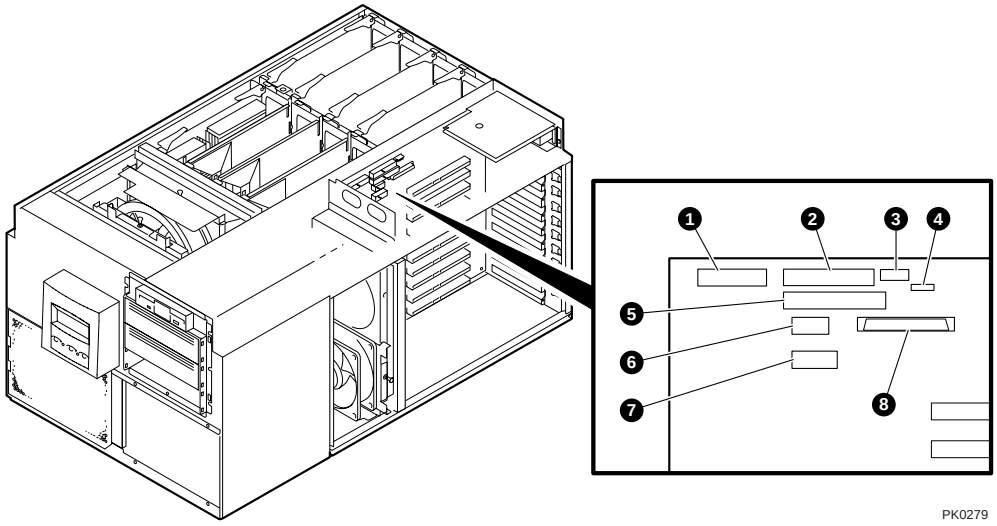


PK0953a

5. Install additional DIMMs (if ordered). Refer to the memory configuration label inside the system card cage cover. Also refer to the following, if necessary:
   - Compaq AlphaServer ES40 Owner's Guide
   - Compaq AlphaServer ES40 DIMM Installation Sheet
6. Install the 8-slot MMBs and secure each MMB to the system backplane with the clips ❶.
7. Replace the system card cage cover and the fan cover.

2.4 Replacing the PCI Backplane

Figure 2–9 Cables Connected to PCI Backplane

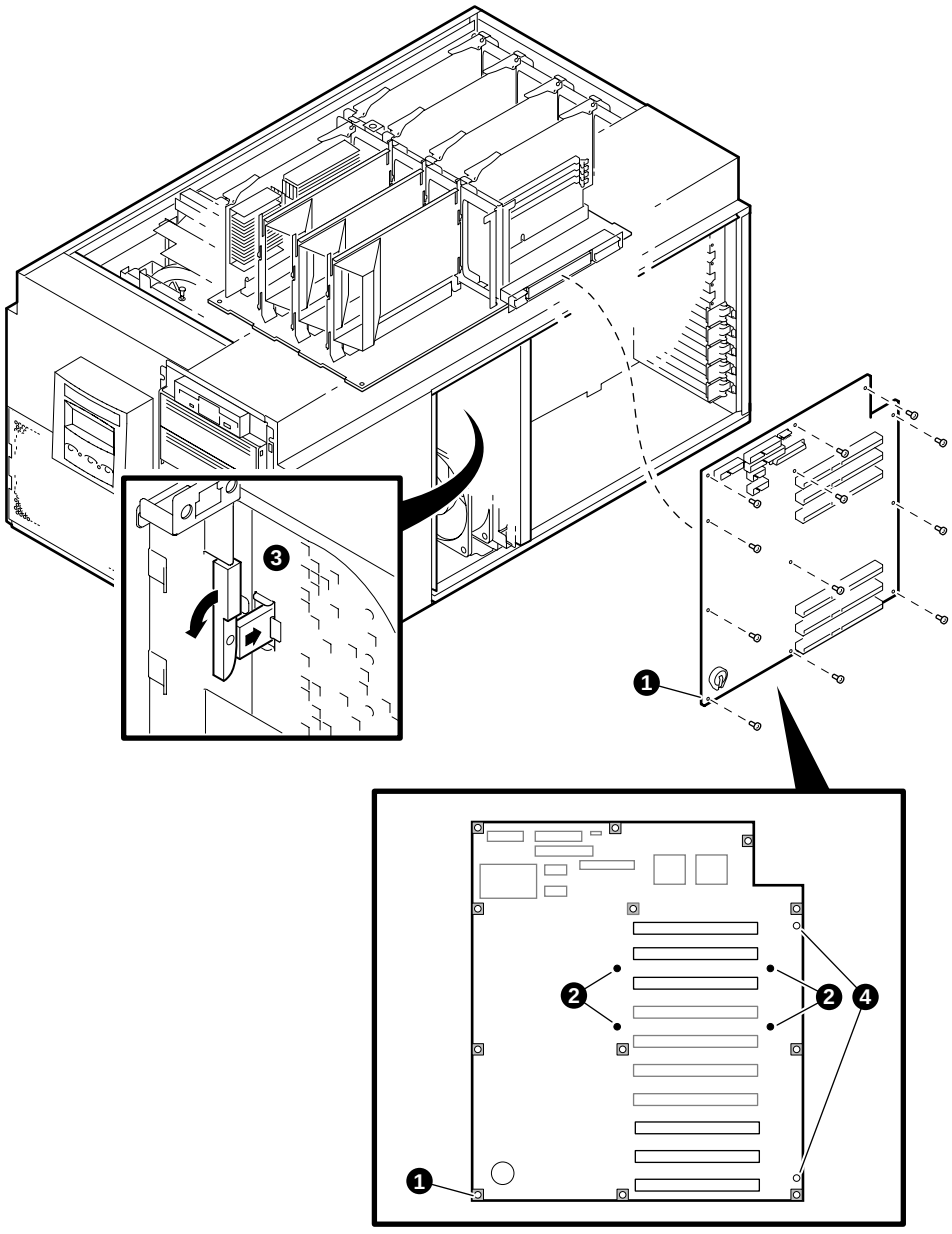


	Connecting Cable	Connects To:
❶	17-04785-01	Fans
❷	17-03970-04	Floppy
❸	17-04786-01	Cover sensors
❹	70-31349-01	Speaker
❺	17-04678-02	CD-ROM
❻	17-03971-07	OCP
❼	17-04914-01 (if present)	Storage disk cage
❽	17-04400-06	I/O controller module

Disconnecting the Cables

1. Remove the cover to the PCI card cage.
2. Record the location of installed PCI cards.
3. Remove all external cables from the PCI bulkheads in the rear of the unit. Remove internal cables from PCI cards.
4. Unlatch and remove the cards from the card cage.
5. Disconnect cables connected to the PCI backplane. See Figure 2–9.
6. Remove the top fan (pedestal/rack orientation) or left fan (tower orientation). This permits access to an ejector lever needed for removing the PCI backplane.

Figure 2–10 Removing the Six-Slot Backplane



Removing the PCI Backplane

CAUTION: *When removing the PCI backplane, be careful not to flex the board. Flexing the board may damage the BGA component connections.*

1. Remove the 12 screws ❶ that secure the PCI backplane to the chassis.

   CAUTION: *Do not remove the four additional nonwashered screws ❷. Removing them inactivates the built-in mechanism for extracting the PCI backplane from the system.*

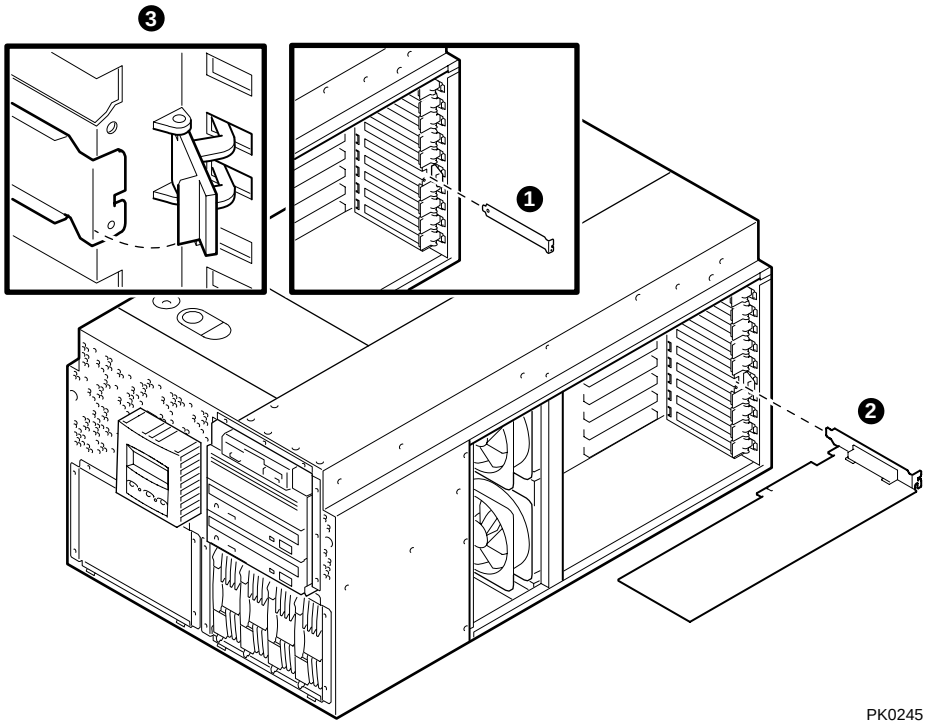
2. Use the ejector lever ❸ in the fan area to separate the PCI backplane from the system motherboard, then lift the backplane out of the chassis.
3. Align the new (10-slot) backplane on the guide pins ❹, and press the board firmly until it is seated.

   NOTE: *Seating the PCI backplane requires considerable pressure. When seating the PCI backplane in a cabinet, a second person should brace the chassis to ensure that no excessive stress is placed on the rails.*

4. Insert the 12 screws to secure the new backplane to the chassis.
5. Connect the cables you previously disconnected from the old backplane. See Figure 2–9.

Continued on next page

Figure 2–11 Installing PCI Cards



Completing the Upgrade

1. Reinstall and reconnect the PCI cards and install any new PCI cards (Figure 2–11). Remove the bulkhead filler plate ❶ before installing a new card ❷.

NOTE: *Some full-length PCI cards may have extender brackets for installing into ISA/EISA card cages. Remove the extender brackets before installing such a card.*

---

2. Secure the cards to the card cage with the latch ❸.
3. Replace the fan, the PCI card cage cover, and the enclosure covers.
4. Reconnect the power cords.
5. Reconnect external devices.

2.5 Verifying the Upgrade

Observe the power-up display and enter the SRM show config command to verify the upgrade.

Example 2–1 Show Config Command

```
P00>>> show config
                        Compaq Computer Corporation
                          Compaq AlphaServer ES40
.
.
.
.Memory
  Array       Size       Base Address
---------  ----------  ----------------
    0        256Mb     0000000060000000
    1        512Mb     0000000040000000
    2        256Mb     0000000070000000
    3       1024Mb     0000000000000000

     2048 MB of System Memory
Slot   Option               Hose 0, Bus 0, PCI
   2/0 NCR 53C896           pke0.7.0.2.0      SCSI Bus ID 7
   2/1 NCR 53C896           pkf0.7.0.102.0    SCSI Bus ID 7
   4   DEC PowerStorm
   7   Acer Labs M1543C                       Bridge to Bus 1, ISA
  15   Acer Labs M1543C IDE  dqa.0.0.15.0
                             dqb.0.1.15.0
                             dqa0.0.0.15.0     TOSHIBA CD-ROM XM-6302B
  19   Acer Labs M1543C USB

       Option                Hose 0, Bus 1, ISA
       Floppy                dva0.0.0.1000.0

 Slot  Option                Hose 1, Bus 0, PCI
   1   NCR 53C895            pka0.7.0.1.1      SCSI Bus ID 7
                             dka0.0.0.1.1      RZ2DD-LS
                             dka100.1.0.1.1    RZ2DD-LS
                             dka200.2.0.1.1    RZ1CB-CS
   3   NCR 53C810            pkb0.7.0.3.1      SCSI Bus ID 7
                             dkb0.0.0.3.1      RZ25
   4   DE500-BA Network Con  ewa0.0.0.4.1      00-00-F8-09-90-FF
   6   DECchip 21152-AA                       Bridge to Bus 2, PCI

 Slot  Option                Hose 1, Bus 2, PCI
   0   NCR 53C875            pkc0.7.0.2000.1   SCSI Bus ID 7
   1   NCR 53C875            pkd0.7.0.2001.1   SCSI Bus ID 7
   2   DE500-AA Network Con  ewb0.0.0.2002.1   00-06-2B-00-25-5B
P00>>>
```

Tru64 UNIX and OpenVMS

1. Power up the system to the SRM console. Observe the power-up displays for error messages, which are enclosed by three asterisks (***). For example, if there is a problem with a DIMM, you might get a message such as the following:

   ```
   *** Error - DIMM 6 on MMB 0 failed powerup diagnostics ***
   ```

   If the console does not come up, check the SROM messages on the OCP display. A PCI err message might indicate a loose PCI connector.

2. At the P00>>> prompt, enter the **show config** command. Check that all of the PCI options you installed are listed in the display and that the total system memory is the amount of memory you installed.

Windows NT

1. Power up the system to the AlphaBIOS console.
2. From the AlphaBIOS startup screen, press **F2** to enter Setup.
3. From the Setup screen, select **Display System Configuration**.
4. From the Display System Configuration Screen, select **PCI Configuration**. Make sure that all the options you installed are listed.
5. Press **ESC** to exit the PCI Configuration screen and return to the Display System Configuration screen.
6. At the Display System Configuration screen, select **Memory Configuration**. Make sure the total amount of memory is the amount of memory you installed.