AlphaServer 2100 and 2100 RM

Upgrade to AlphaServer 2100A

Part Number: EK-2100A-UP. A02

Digital Equipment Corporation
Maynard, Massachusetts

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The postpaid Reader's Comments form at the end of this document requests your critical evaluation to assist in preparing future documentation.

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Preface

Introduction

This document provides information for upgrading the following AlphaServer 2100 systems to AlphaServer 2100A systems:

- AlphaServer 2100 system in BA740 pedestal enclosure
- AlphaServer 2100 RM system in BA741 rackmount enclosure

Audience

This document is for service persons and self-maintenance customers who are responsible for managing and upgrading AlphaServer 2100 or AlphaServer 2100 RM systems.

Organization of This Document

Chapter 1 explains the prerequisites for the upgrade.

Chapter 2 describes the hardware removal and replacement procedure for upgrading a pedestal system.

Chapter 3 describes the hardware removal and replacement procedure for upgrading a rackmount system.

Chapter 4 explains how to upgrade the system firmware.

Chapter 5 contains instructions on updating your configuration data.

Chapter 6 explains how to complete the upgrade.

Conventions

The following table lists conventions used in this guide.

Convention	Meaning
lowercase	Console commands are shown in lowercase. However, you can enter console commands in uppercase or lowercase.
Warning	Warnings contain information to prevent personal injury.
Caution	Cautions provide information to prevent damage to equipment or software.
`boot`	Console commands are shown in this special typeface.
italic type	Italic type in command syntax indicates a variable.
1 2 3…	In some illustrations, a numbered callout labels a part of the illustration. In text, it refers to a labeled part of a corresponding illustration.

Symbols

Pay particular attention to the following warning in this document.

Warning

CPU and memory modules have parts that operate at high temperatures. Wait 2 minutes after power is removed before handling these modules.

For More Information

The following table lists reference documents for the hardware upgrade.

Document Title	Part Number
AlphaServer 2100/2100RM Series Service Guide	EK-KN450-SV
AlphaServer 2100 Illustrated Parts Breakdown	EK-SY450-IP
AlphaServer 2100 Owner's Guide	EK-KN450-OP
AlphaServer 2100 RM Installation/Owner's Guide	EK-KN450-RM

1 Upgrade Requirements

This chapter provides a brief overview of the requirements for upgrading an AlphaServer 2100 or AlphaServer 2100 RM system to an AlphaServer 2100A system.

Hardware Requirements

Be sure to note the following hardware requirements before proceeding with the upgrade.

- The AlphaServer 2100A has no onboard Ethernet. An option card is needed. The DE435-AA Ethernet card, cables, and installation instructions are included in this upgrade kit.
- The onboard SCSI could be connected externally on the AlphaServer 2100 system, within the SCSI limitations. The AlphaServer 2100A requires an additional controller for external expansion.
- The AlphaServer 2100 system has 8 EISA slots and 3 PCI slots; the AlphaServer 2100A has 3 EISA slots and 8 PCI slots. Customers who have more than 3 EISA options need to transfer the functionality to PCI.

- The following options are *not* supported on the AlphaServer 2100A:

DE422-SA	DEC EtherWORKS EISA TP/BNC
DE425-AA	EISA, 32 Bit, B. M., PC NIC
PB2HA-SA	EISA to Fast SCSI Host Adapter
PB2SX-AA	EISA Prestoserve NVRAM Option
PBXGA-*nn*	ZLXp-E1 8-Plane or 24-Plane Adapter

- Before reinstalling EISA and PCI modules, consult the *AlphaServer 2100A Hardware Release Notes* (EK-2100A-CL), included with this upgrade kit. The release notes provide configuration guidelines and restrictions to assure optimal operation of options in PCI slots.

Software Requirements

OpenVMS and Windows NT

You must update systems running either OpenVMS or Windows NT to the minimum revision level listed below before you begin the hardware upgrade. The operating system CD-ROM is shipped with the upgrade kit. Consult the operating system installation/upgrade documents for instructions on updating the operating system.

Operating System	Minimum Revision Level
OpenVMS	V6.2-1H1
Microsoft Windows NT	V3.51, plus Hardware Support Disk

Digital UNIX Minimum Revision

You must install the Digital UNIX operating system, V3.2D-2 or higher, *after* you complete the hardware and firmware upgrades. The operating system CD-ROM is shipped with the upgrade kit. Consult the operating system installation/upgrade documents for instructions.

Operating System	Minimum Revision Level
Digital UNIX	V3.2D-2

Recording Customized Configurations

Before you upgrade the hardware, be sure to record any customized configuration information stored in the AlphaServer 2100 system NVRAM. Once you upgrade the hardware, any such customizations will be lost. It is recommended that you record the following items, as well as any others particular to the system you are upgrading. Refer to the *AlphaServer 2000/2100/2100A Firmware Reference Guide* shipped with this upgrade kit.

System password (set password)
Action on power-up (auto_action)
Boot flags (boot_osflags)
Boot device (bootdef_dev)
Console display device (set console)
Operating system type (os_type)
Power-up/diagnostic display message (ocp_text)
Nvram script (edit nvram)

Once you complete the upgrade and restore any customized configuration parameters, certain devices may appear differently in the AlphaServer 2100A `show config` or `show device` displays. For example, the boot device may be named differently in the new displays.

StorageWorks RAID Array Subsystem Firmware

If your system is configured with a StorageWorks RAID controller, you may need to update the RAID controller firmware. The AlphaServer 2100A system requires firmware version 2.16 for EISA controllers and version 2.36 for PCI controllers. If your controller firmware is earlier than these levels, use the V3.11 standalone configuration utility to update it.

Perform the RAID firmware update after you upgrade the hardware and update the system firmware. The V3.11 standalone configuration utility is provided on the Firmware Update CD-ROM in this upgrade kit. Refer to Chapter 5 for instructions.

Upgrade Process

The upgrade should be done in the following order.

1. Update the OpenVMS or Windows NT operating system. Skip this step for Digital UNIX systems.
2. Record any custom configuration information stored in NVRAM.
3. Upgrade the system hardware.
4. Update the system firmware and fail-safe loader.
5. Rebuild the EISA and PCI configuration, and update the RAID firmware, if necessary.
6. Install Digital UNIX.
7. Restore or set up any custom configuration information.

2

Upgrading the Pedestal Hardware

This chapter describes the procedure for upgrading the AlphaServer 2100 BA740 enclosure hardware.

You should be at step 3 of the following upgrade process.

Caution

Before you upgrade the hardware, you must update the OpenVMS or Windows NT operating system to the minimum revision level listed in Chapter 1. Otherwise, the upgraded hardware will not support the operating system. Do not install the new version of Digital UNIX at this time.

Upgrade Process

1. Update the OpenVMS or Windows NT operating system. Skip this step for Digital UNIX systems.
2. Record any custom configuration information stored in NVRAM.
3. **Upgrade the system hardware.**
4. Update the system firmware and fail-safe loader.
5. Rebuild the EISA and PCI configuration, and update the RAID firmware, if necessary.
6. Install Digital UNIX.
7. Restore or set up any custom configuration information.

KFPE*x*-AA Hardware Upgrade Kit

There are three variants of the KFPE*x*-AA hardware upgrade kit, as follows:

- KFPEA-AA Items listed below and Digital UNIX operating system
- KFPEY-AA Items listed below and OpenVMS operating system
- KFPEN-AA Items listed below and Windows NT operating system

KFPE*x*-AA Kit Contents	Part Number	Quantity
2100A system backplane	54-24129-01	1
34-conductor floppy cable	17-04229-01	1
50-conductor SCSI cable, self terminated	17-04193-01	1
Cable clamp	12-15843-02	1
SCSI bulkhead plate	74-48601-01	1
Blank plates for PCI/EISA window	74-42440-01	4
ID label for PCI/EISA slots	36-41957-02	1
Ethernet card	DE435-AA	1
Ethernet cable: Shielded, 15-position D-sub	BNE4C-02	1
Software kit containing:	QZ-00SAA-EW	1
CD-ROM (Customer Firmware Kit)	QZ-003AA-E8	
Digital UNIX and OpenVMS ECU diskette	AK-Q2CR*CA	
Windows NT ECU diskette	AK-PYCJ*CA	
Operating system kit (one of the following):		
Windows NT	QB-23CAA-SA	1
Digital UNIX	QA-MT4AA-H8	1
OpenVMS	QA-MT1AG-H8	1
Upgrade manual (this document)	EK-2100A-UP	1
AlphaServer 2100A Hardware Documentation	QZ-00TAA-GC	
Hardware Release Notes	EK-2100A-CL	1
Owner's Guide	EK-2100A-OP	1
Firmware Reference Guide	EK-AXPFW-RM	1

Tools

The hardware upgrade requires a Number 2 Phillips screwdriver. A powered screwdriver is recommended. You may also need a 7/32 nut driver to disassemble the cable wave guides.

Before You Begin

- If the system is running OpenVMS or Windows NT, do not begin the hardware upgrade until you have updated the operating system to the level listed in Chapter 1.
- The hardware upgrade takes about an hour.
- Check the contents of the upgrade kit to make sure you have all the items you need.
- It is recommended that you have the system IPB, Service Guide, or Service Help File on hand to verify component removal and replacement.
- Remove and replace FRUs in the order listed in this chapter.
- Keep all cables and modules unless otherwise directed.
- Keep all screws that you remove. You will be reusing the screws.

Caution

System modules are static sensitive. Use an antistatic mat and wrist strap when handling modules.

Hardware Disassembly

Step 1: Perform a power shutdown.

A. Perform an orderly shutdown of the operating system, as described in the operating system documentation.

B. Set the DC power switch on the operator control panel to “off.” If necessary, refer to the system Owner’s Guide for the location of switches and power cords.

C. Shut off AC power by setting the AC On/Off switch on each power supply to (O).

D. Unplug the AC power cord for each power supply.

E. Remove the front door, the panel from the right side, and the panel from the left side, as illustrated in the system Owner’s Guide.

Warning

CPU and memory modules have parts that operate at high temperatures. Wait 2 minutes after power is removed before handling these modules.

Step 2: Remove power supplies.

Remove the power supplies. There are 3 screws per supply.

Step 3: Unplug cables.

A. Unplug all external cables at the I/O area on the rear of the enclosure.

B. Unplug internal cables from all EISA and PCI modules at the left of the enclosure.

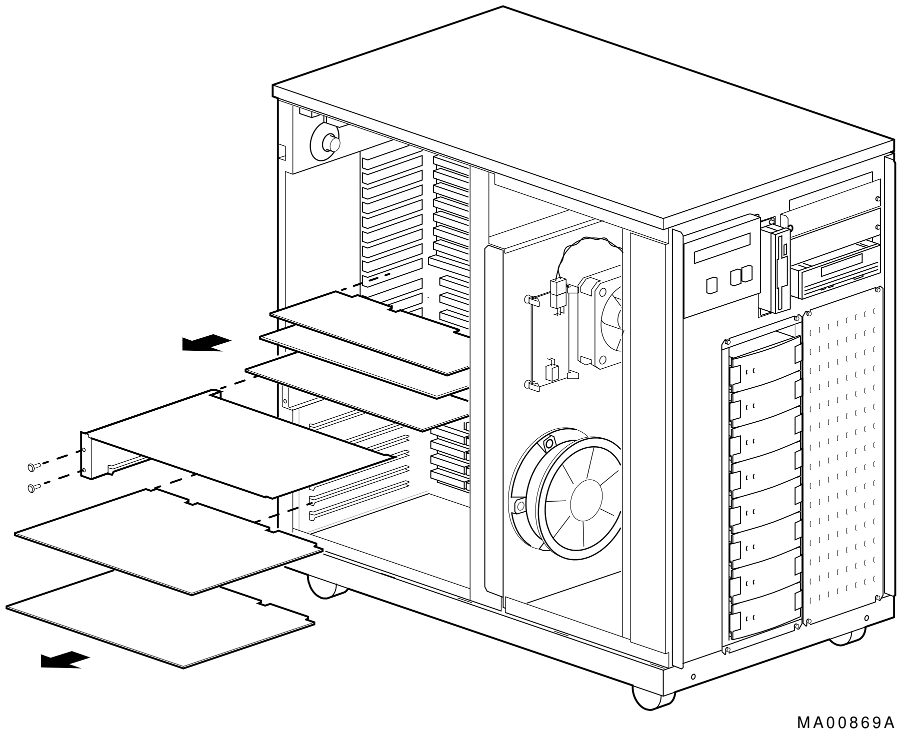
Step 4: Remove system bus option modules.

A. Remove and discard the standard I/O module.

B. Remove EISA and PCI modules.

C. Remove CPU and memory modules, plastic filler plates, and card cage divider. Set aside the 6-32 screws for the card cage divider for reuse.

Figure 2-1: Removing System Bus Modules



Step 5: Remove all internal cabling.

A. Disconnect all internal power cables and I/O cables that pass through the 2 wave guides. The cables include:

OCP cable (1)
Floppy cable (1)
Embedded SCSI cables (2)
Internal SCSI controller cable (1 to 4)
Fan power cable (1)
Internal StorageWorks power cable (1 or 2)

Note

If SCSI controller cables are installed, mark them to ensure proper reconnection.

B. Remove the wave guides from the enclosure. Withdraw all cables through the internal card cage wall.

C. Remove the nuts from the wave guides (4 nuts in each guide) and separate the wave guides. Some systems have wave guides without nuts.

D. Withdraw the following cables and discard:

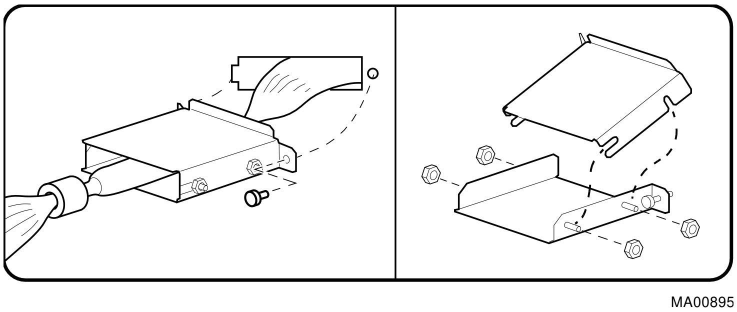
Embedded SCSI cables	17-03872-01 17-03873-01
Floppy cable	17-03871-01

Step 6: Reassemble wave guides and assemble cables.

Caution

All ferrite suppressers must be oriented to the inside of the card cage, as shown in Figure 2-2.

Figure 2-2: Orientation of Ferrite Suppressers on Wave Guide Assembly



A. Assemble the following cables into one of the wave guides:

New floppy cable (17-04229-01)
OCP cable
Fan power cable
Internal StorageWorks power cable

B. Assemble the following cables into the other wave guide:

New embedded SCSI cable (17-04203-01)
All remaining SCSI controller cables.

C. Tighten all nuts and set aside the wave guide assemblies for later installation.

Step 7: Remove system backplane

Unplug the cables from the system backplane, and remove the backplane. There are 13 screws. Set aside the screws.

This completes the hardware disassembly. You are ready to upgrade the hardware, as described next.

Hardware Upgrade Procedure

Note

Unless otherwise specified, install components by reversing the steps in the disassembly procedure.

Step 1: Enable the FSL update switch on the new backplane.

A. Locate the 2 fail-safe loader (FSL) switches on the new system backplane.

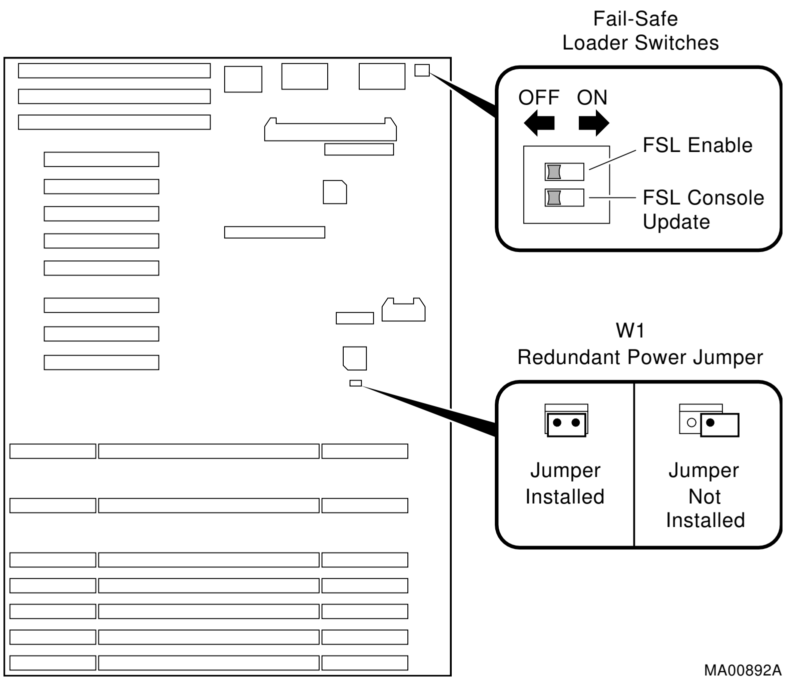
B. Make sure the FSL enable switch (top switch) is pushed to the left (disabled).

C. Using a small implement, set the FSL update switch (bottom switch) to the right (enabled). This will allow writes to the FSL. You will be updating the FSL as part of the firmware update described in Chapter 4.

Note

For systems with redundant power supplies, install jumper W1 on the new system backplane, as shown in Figure 2-3.

Figure 2-3: FSL Switches and W1 Jumper



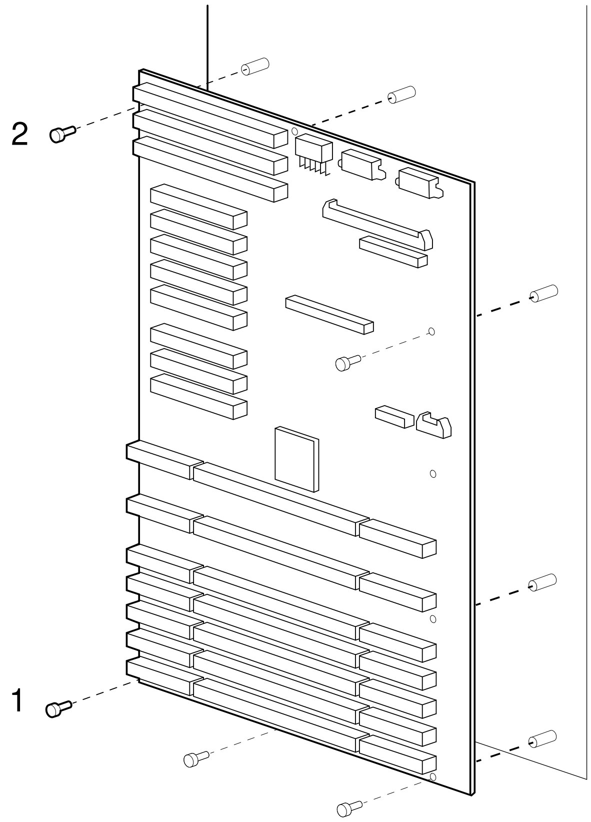
Step 2: Install the new system backplane.

Install the AlphaServer 2100A system backplane (54-24129-01), using the 13 screws you set aside when you removed the AlphaServer 2100 backplane.

Caution

The backplane must be correctly aligned in order for modules to operate. To ensure correct alignment, start the top center screw just enough to support the module but still allow it to move freely. Start the bottom left screw and the top left screw. Tighten the *bottom left* screw first **(1)** and the *top left* screw second **(2)** to ensure correct module alignment. Then insert and tighten the remaining screws.

Figure 2-4: Installing AlphaServer 2100A Backplane



Step 3: Recable the system.

A. Install the wave guide assembly that contains the power cables and floppy cable by threading the cables through the rear cutout in the internal card cage wall. Note the proper orientation of the wave guide assembly (Figure 2-2).

Reconnect all of the power cables and the floppy cable to storage devices and fans.

B. Install the wave guide assembly that contains all of the SCSI cables by threading the cables through the front cutout in the internal card cage wall.

Reconnect all of the SCSI cables to the appropriate connectors on the new system backplane. Refer to the following illustrations:

Figure 2-5: Reconnection: Fan/Removable Media Cable
Figure 2-6: Reconnection: Internal StorageWorks Power Cable
Figure 2-7: Reconnection: Floppy Cable
Figure 2-8: Reconnection: Embedded SCSI Cable
Figure 2-9: Reconnection: OCP Cable
Figure 2-10: Reconnection: Remote I/O Cable

Figure 2-5: Reconnection: Fan/Removable Media Cable

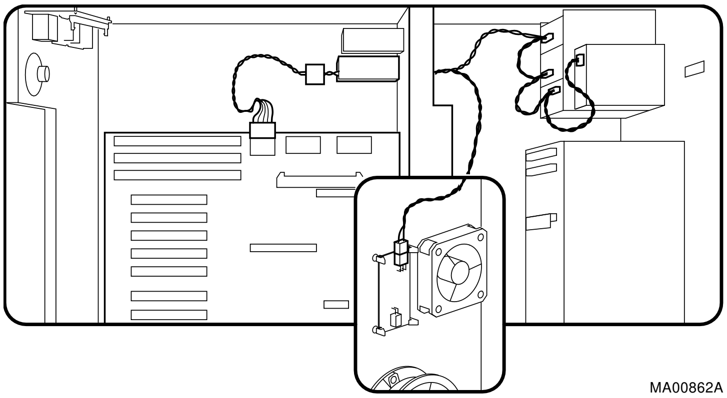


Figure 2-6: Reconnection: Internal StorageWorks Power Cable

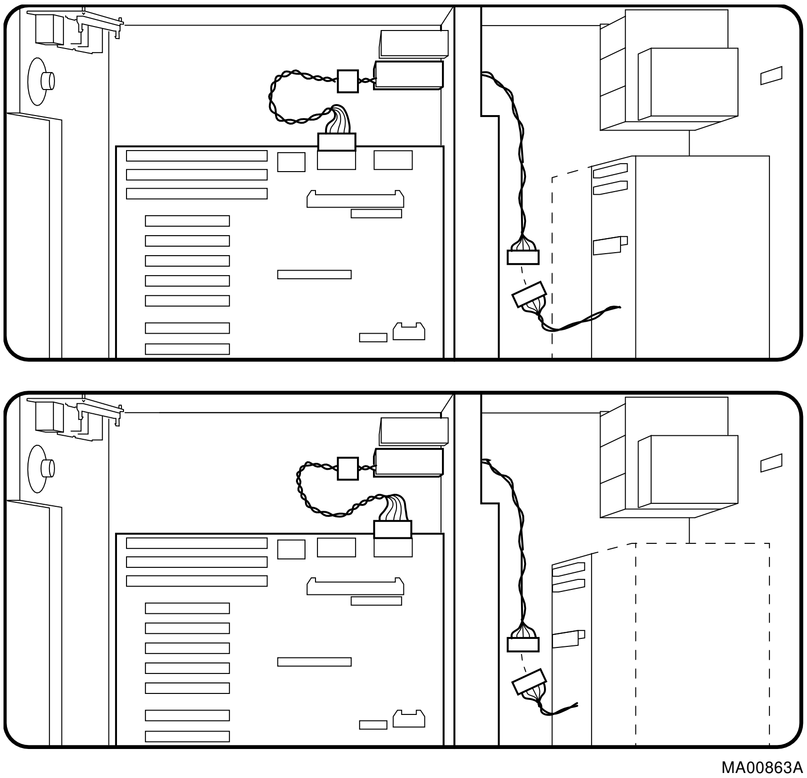
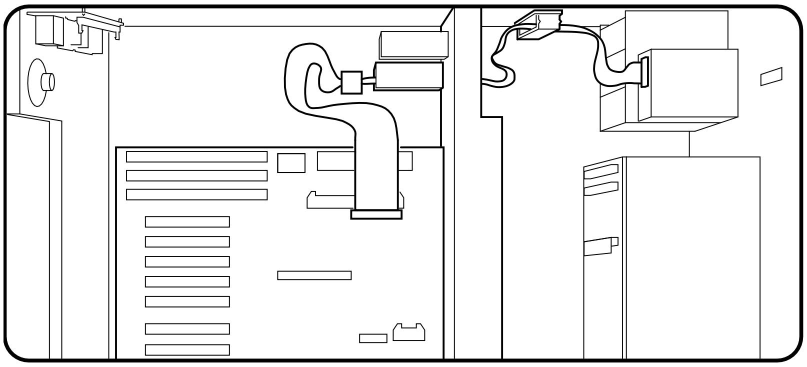


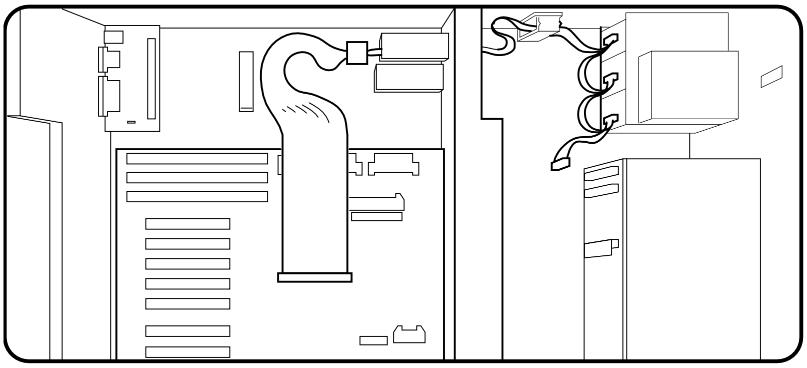
Figure 2-7: Reconnection: Floppy Cable



Note

Be sure to use the new floppy cable (17-04229-01) for this procedure. The location of pin 1 on the floppy connector depends on the device manufacturer. Therefore, you may need to flip the cable in order for the floppy to work.

Figure 2-8: Reconnection: Embedded SCSI Cable



Note

Be sure to use the new SCSI cable (17-04193-01) for this procedure. Ensure that the self-contained terminator is fully seated at the end of the cable if it is not connected to the StorageWorks backplane.

Figure 2-9: Reconnection: OCP Cable

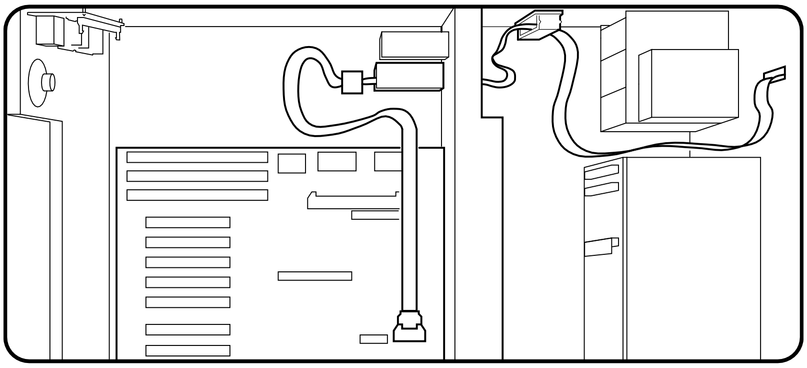
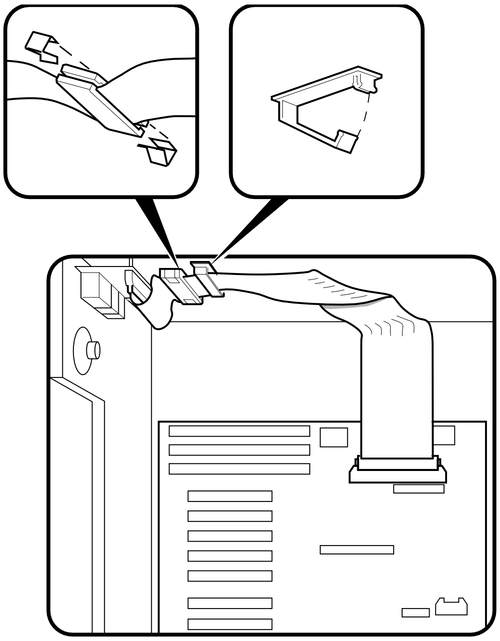


Figure 2-10: Reconnection: Remote I/O Cable



Note

Install the cable clamp supplied in the upgrade kit next to the ferrite suppresser.

This completes the cabling procedures.

Step 4: Install the SCSI bulkhead cover.

Install the SCSI bulkhead cover (74-48601-01) over the cut-out in the system chassis from which the connector of the old SCSI cable was removed.

Step 5: Reinstall system bus option modules.

A. Reinstall the card cage divider with the 6-32 screws you set aside earlier.

B. Reinstall CPUs and memories.

C. Reinstall plastic filler modules.

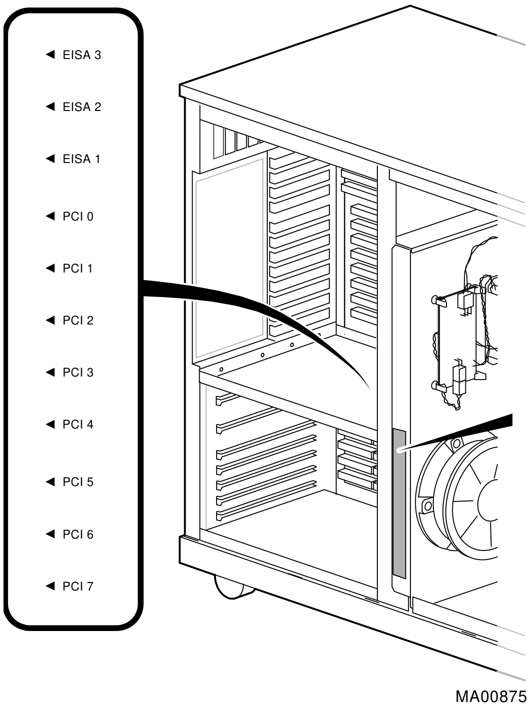
Caution

Empty slots adjacent to populated slots require a plastic filler to be inserted.

Step 6: Affix EISA/PCI slot ID label.

Be sure the top of the new label is aligned directly on top of the old label.

Figure 2-11: Slot ID Label



Step 7: Reinstall PCI and EISA Modules.

A. Reinstall PCI and EISA modules.

B. Reconnect external cables into PCI/EISA modules.

The AlphaServer 2100A backplane has 3 EISA slots and 8 PCI slots. The kit provides extra blank plates for PCI/EISA windows, if needed.

Note

Before reinstalling EISA and PCI modules, consult the *AlphaServer 2100A Hardware Release Notes* (EK-2100A-CL) shipped with this document. The release notes provide configuration guidelines and restrictions to assure optimal operation of options in PCI slots.

Step 8: Reinstall power supplies and right and left panels.

After reinstalling these components, attach the AC power cords to the power supplies.

Next Steps

This completes the hardware upgrade. You now need to update the system firmware, as described in Chapter 4.

3 Upgrading the Rackmount Hardware

This chapter describes the procedure for upgrading the AlphaServer 2100 RM BA741 enclosure hardware.

You should be at step 3 of the following upgrade process.

Caution

Before you upgrade the hardware, you must update the OpenVMS or Windows NT operating system to the minimum revision level listed in Chapter 1. Otherwise, the upgraded hardware will not support the operating system. Do not install the new version of Digital UNIX at this time.

Upgrade Process

1. Update the OpenVMS or Windows NT operating system. Skip this step for Digital UNIX systems.
2. Record any custom configuration information stored in NVRAM.
3. **Upgrade the system hardware.**
4. Update the system firmware and fail-safe loader.
5. Rebuild the EISA and PCI configuration, and update the RAID firmware, if necessary.
6. Install Digital UNIX.
7. Restore or set up any custom configuration information.

KFPE*x*-BA Hardware Upgrade Kit

There are three variants of the KFPE*x*-BA hardware upgrade kit, as follows:

- KFPEA-BA Items listed below and Digital UNIX operating system
- KFPEY-BA Items listed below and OpenVMS operating system
- KFPEN-BA Items listed below and Windows NT operating system

KFPE*x*-BA Kit Contents	Part Number	Quantity
2100A RM system bus backplane	54-24281-01	1
2100A RM PCI/EISA backplane	54-24283-01	1
PCI/EISA compartment	70-32504-01	1
34-conductor floppy cable	17-04085-01	1
50-conductor SCSI cable, self terminated	17-04203-01	1
Ethernet card	DE435-AA	1
Ethernet cables: Shielded, 15-position D-sub	BNE4C-02	1
SCSI bulkhead plate	74-48601-01	1
Blank plates for PCI/EISA window	74-42440-01	4
Model number conversion label	36-15946-02	1
Model number ratings label	36-17674-00	1
Software kit containing:	QZ-00SAA-EW	1
CD-ROM (Customer Firmware Kit)	QZ-003AA-E8	
Digital UNIX and VMS ECU diskette	AK-Q2CR*CA	
Windows NT ECU diskette	AK-PYCJ*CA	
Operating system kit (one of the following):		
Windows NT	QB-23CAA-SA	1
Digital UNIX	QA-MT4AA-H8	1
OpenVMS	QA-MT1AG-H8	1
Upgrade manual (this document)	EK-2100A-UP	1
AlphaServer 2100A RM Installation/Owner’s Guide	EK-2100A-RM	1
AlphaServer 2100A Hardware Documentation	QZ-00TAA-GC	
Hardware Release Notes	EK-2100A-CL	1
Owner’s Guide	EK-2100A-OP	1
Firmware Reference Guide	EK-AXPFW-RM	1

Tools

The hardware upgrade requires the following tools:

- Number 2 Phillips screwdriver. A powered screwdriver is recommended.
- Number 1 Phillips screwdriver (for removing/replacing mass storage compartment cover).
- Flat-blade screwdriver, 1/2-inch wide
- Torque device capable of up to 20 inch-pounds, with extension and Number 2 Phillips tip.

Before You Begin

- The hardware upgrade takes approximately one hour.
- Check the contents of the upgrade kit to make sure you have all the items you need.
- It is recommended that you have the system Service Guide or Service Help File on hand to verify component removal and replacement.
- Remove and replace components in the order listed in this chapter.
- Keep all cables and modules unless otherwise directed.
- Keep all screws that you remove. You will be reusing the screws.

Caution

System modules are static sensitive. Use an antistatic mat and wrist strap when handling modules.

Hardware Disassembly

Step 1: Perform a power shutdown.

A. Perform an orderly shutdown of the operating system, as described in the operating system documentation.

Note

It is recommended that you back up the system disk prior to system shutdown.

B. Set the DC power switch on the operator control panel to “off.” If necessary, refer to the system Owner’s Guide for the location of switches and power cords.

C. Unplug the AC power cord for each power supply.

Warning

CPU and memory modules have parts that operate at high temperatures. Wait 2 minutes after power is removed before handling these modules.

Step 2: Unplug cables.

A. Unplug all external cables at the I/O area on the rear of the enclosure.

B. Remove the cable management bracket from the system chassis.

Step 3: Stabilize the cabinet and extend the system out.

Warning

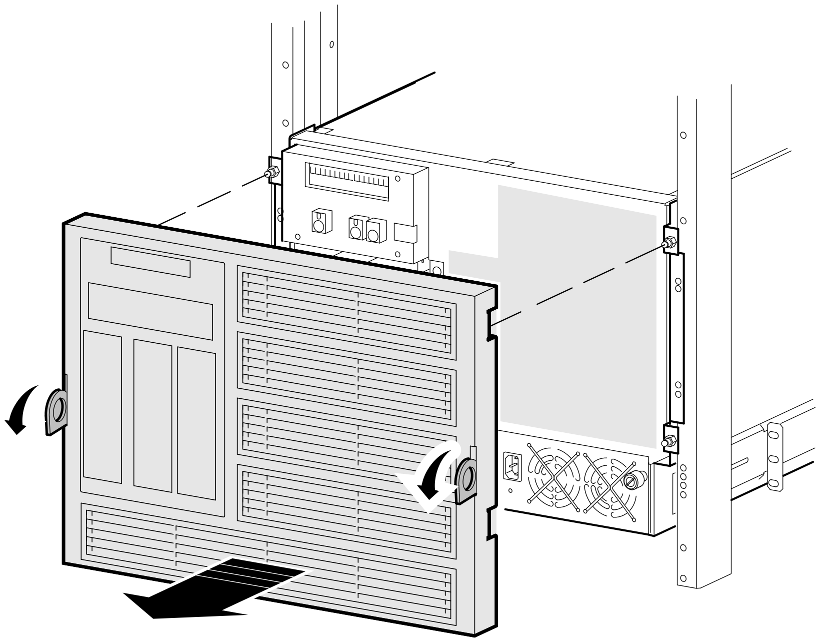
To prevent serious personal injury and equipment damage, stabilize the cabinet as described in the cabinet documentation. Each system chassis weighs 45.4 kg (100 lb.). On a cabinet with multiple systems, ensure that only one system is extended out of the cabinet at any one time.

Do not extend more than one slide assembly at a time; cabinet instability may result.

A. After you stabilize the cabinet, remove the front door and any bezels that prevent access to the system chassis, if applicable.

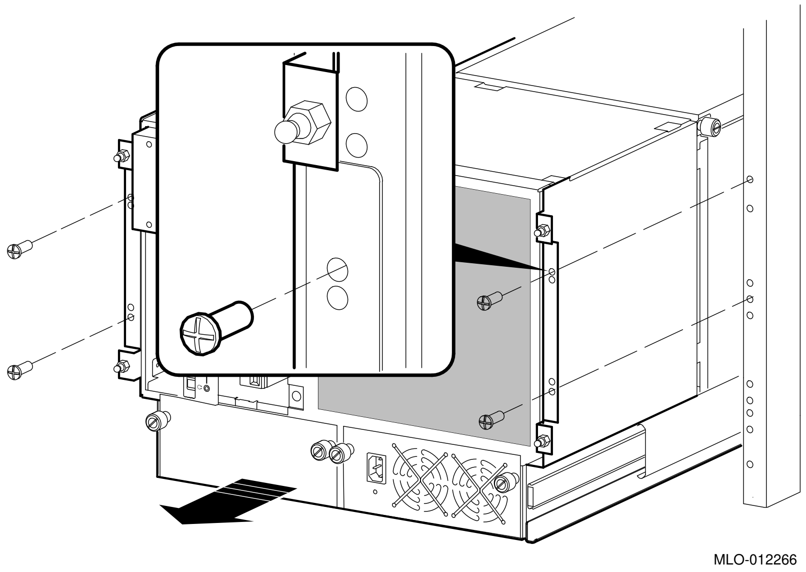
B. Remove the front panel of the system chassis.

Figure 3-1: Removing Front Panel



C. Remove the 4 screws and extend the system out until it locks.

Figure 3-2: Extending System Chassis



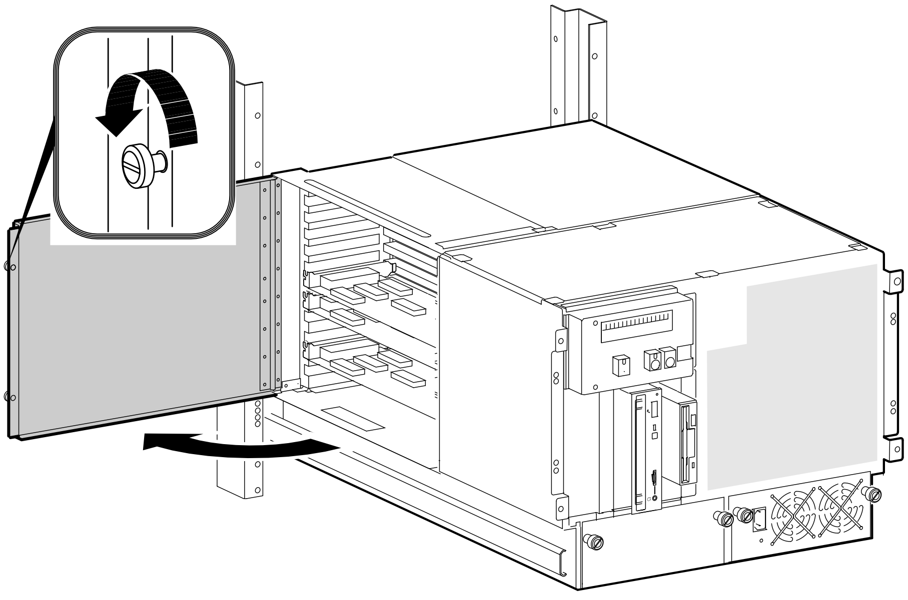
Warning

Under some circumstances, you may decide to completely remove a system from the cabinet for easier access to components. Use sufficient personnel and equipment to prevent personal injury and equipment damage.

Step 4: Access the PCI/EISA compartment and remove modules.

A. Loosen the 2 captive screws and open the PCI/EISA compartment door.

Figure 3-3: Accessing the PCI/EISA Compartment

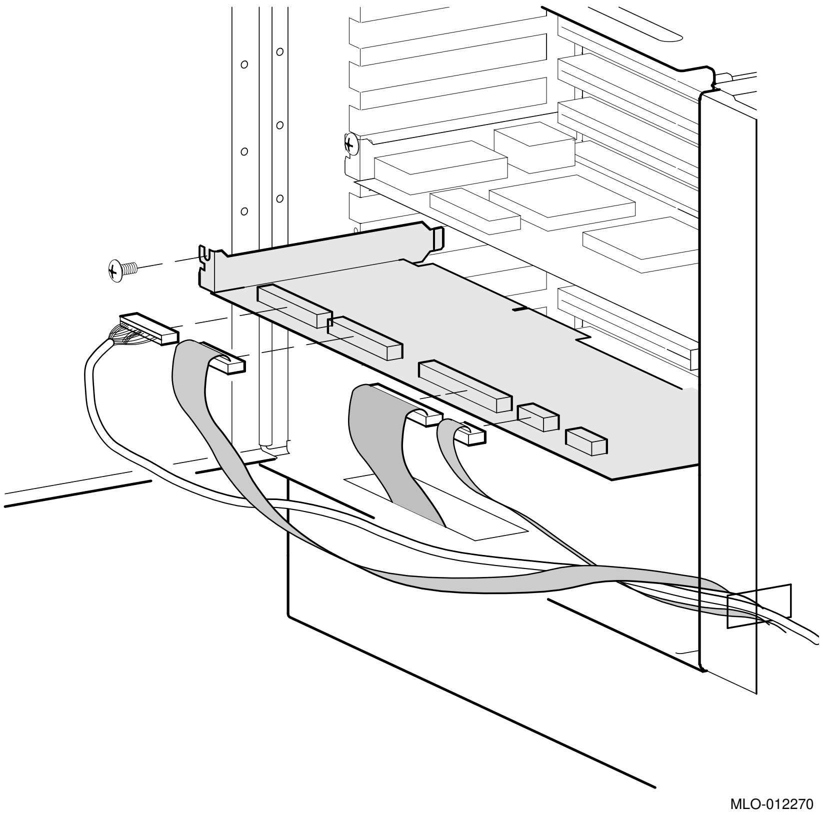


B. Unplug all cables mounted to modules and route them through the egress openings in the card cage. Most cables are routed through the right egress (Figure 3-4).

C. Remove PCI/EISA boards and blank plates for PCI/EISA windows.

D. Remove and discard the standard I/O module (Figure 3-4).

Figure 3-4: Removing Cables and Standard I/O Module

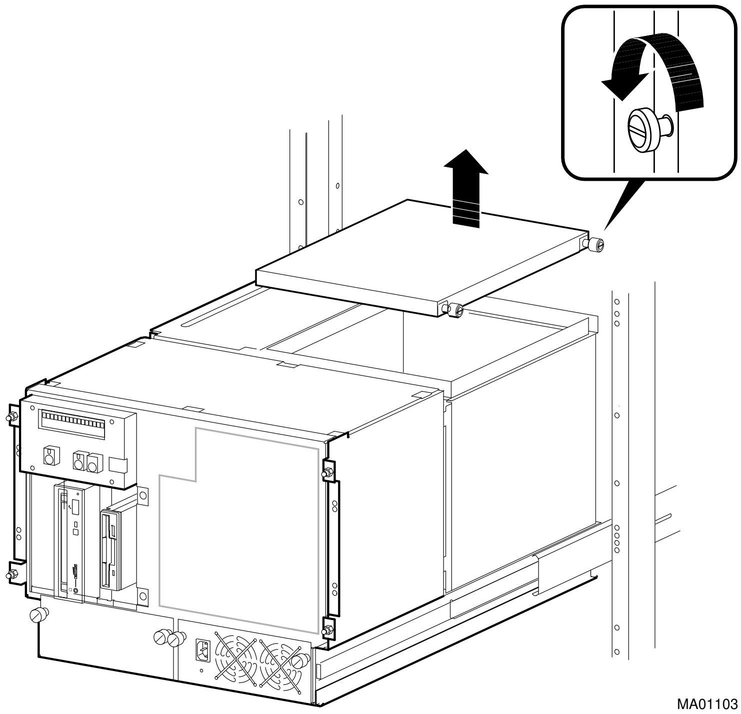


Step 5: Access the system bus compartment and remove modules.

A. Loosen the 2 captive screws and lift off the cover (Figure 3-5).

B. Remove CPU and memory modules and all plastic fillers and set them aside for later reinstallation.

Figure 3-5: Accessing System Bus Compartment



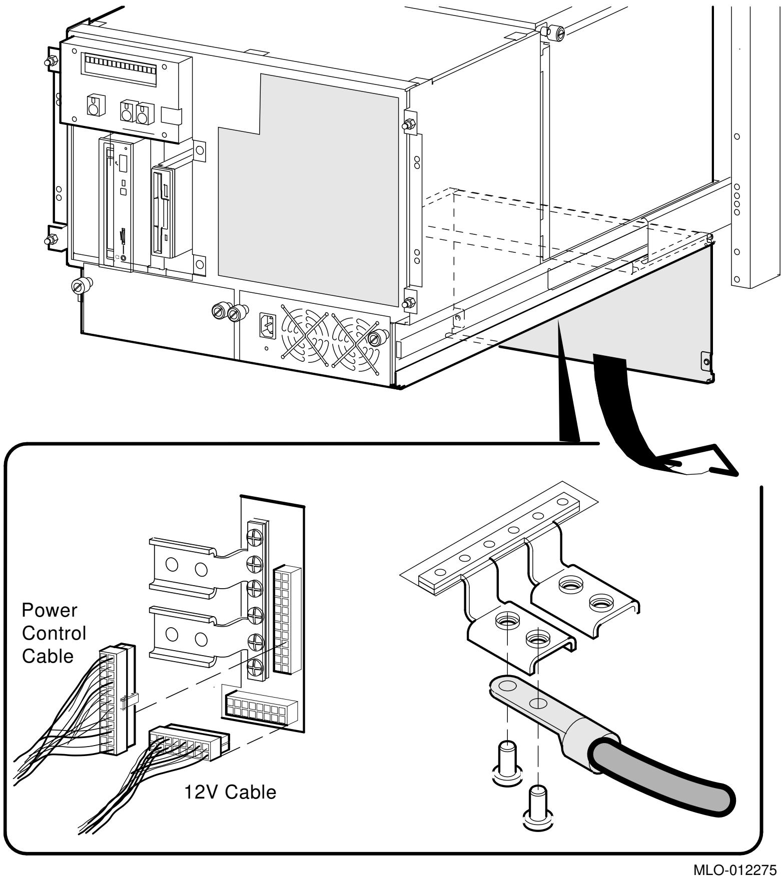
Step 6: Disconnect the power supplies.

A. Loosen the quarter-turn captive fasteners and open the bottom access door.

B. Remove the power control cable and 12V cable from their connectors beneath the system backplane.

C. Unscrew the 3V and 5V leads from the power bus bars.

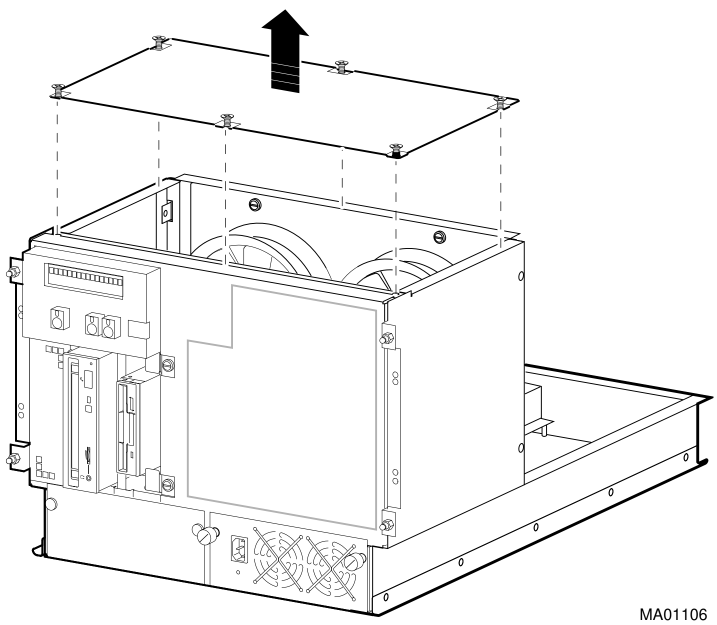
Figure 3-6: Removing Power Control Cables



Step 7: Disconnect the fan power cable.

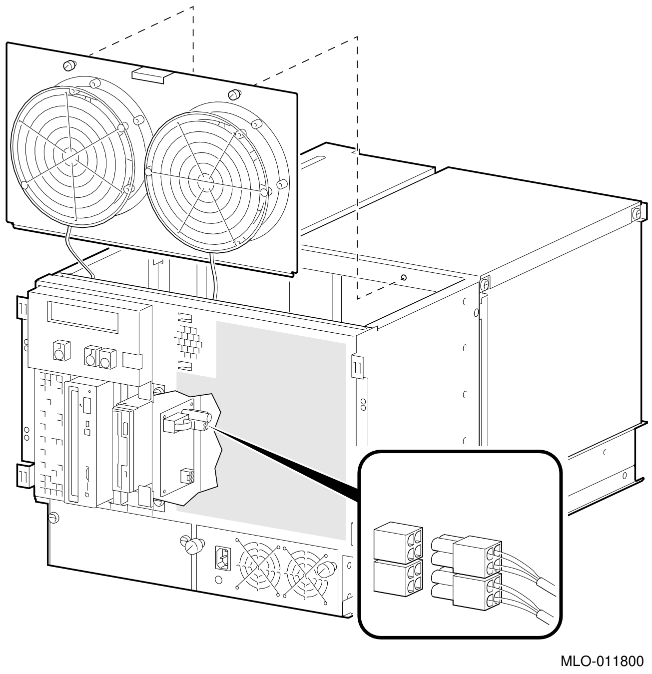
A. Using a Number 1 Phillips screwdriver, loosen the 6 quarter-turn fasteners and remove the cover to the mass storage compartment.

Figure 3-7: Removing Top Cover



B. Remove the fan assembly.

Figure 3-8: Removing Fan Assembly

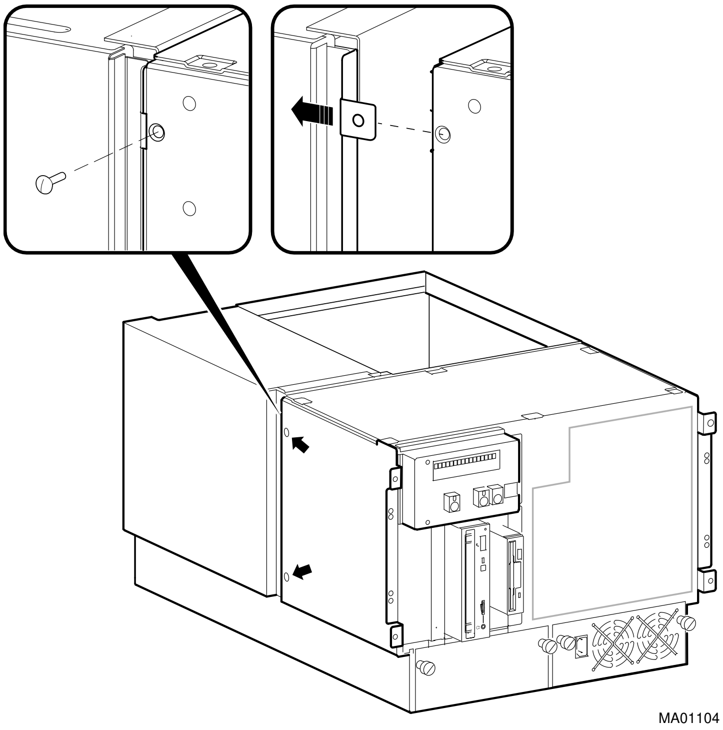


C. Disconnect the fan power cable from the top connector on the EISA/PCI backplane. Refer to Figure 3-18.

Step 8: Separate the front and rear halves of the enclosure.

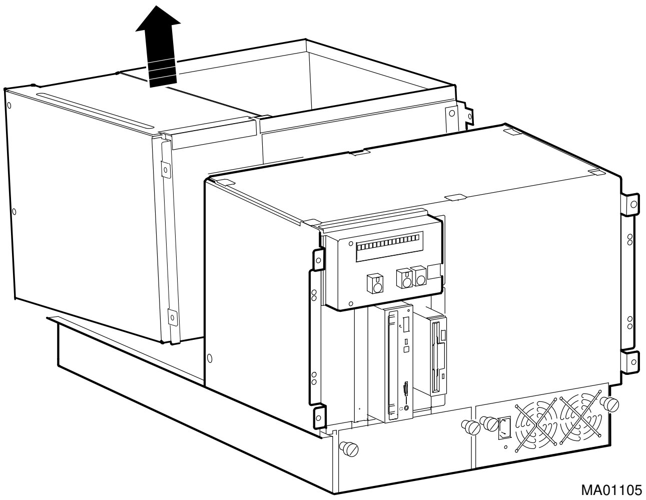
A. Remove and set aside the 4 screws and pull the rear half of the enclosure back until it separates from the front.

Figure 3-9: Separating Enclosure



B. Lift off the rear half of the enclosure (Figure 3-10) and set it down as shown in Figure 3-12.

Figure 3-10: Lifting Off Rear Half

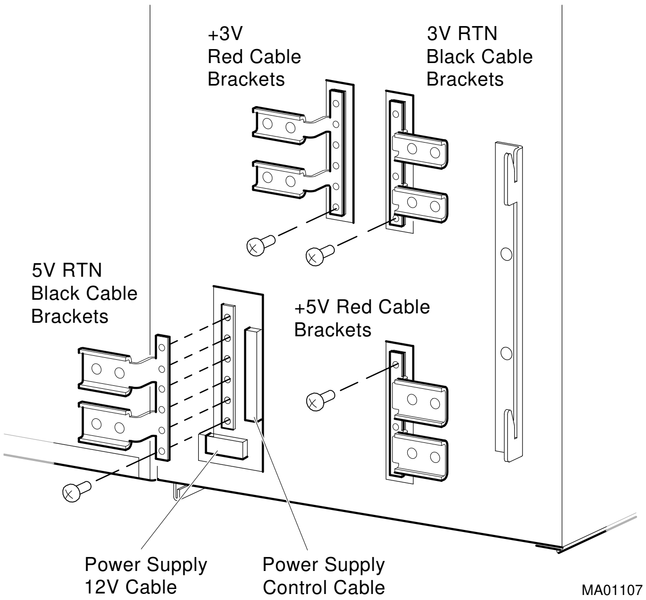


Warning

The rear half of the enclosure is heavy. Take precautions in lifting it and setting it down.

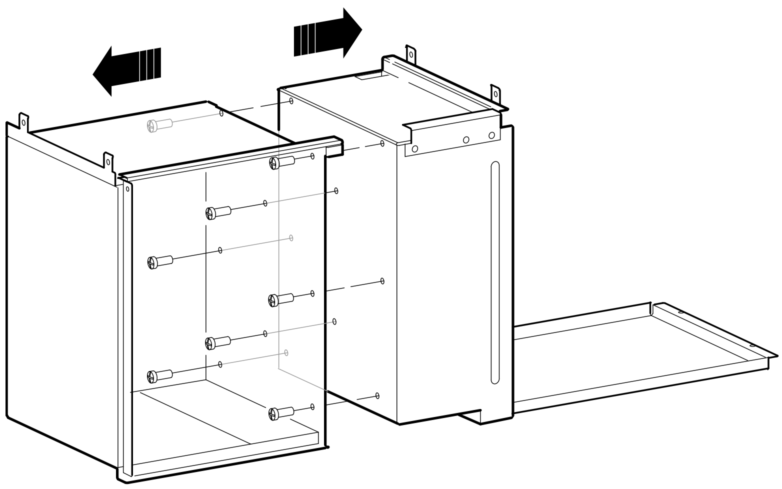
C. Remove the 4 power bus bars (6 screws each).

Figure 3-11: Removing Power Bus Bars



D. Separate the system bus compartment from the PCI/EISA bus compartment. The 8 screws are accessible from inside the system bus card cage.

Figure 3-12: Separating Compartments



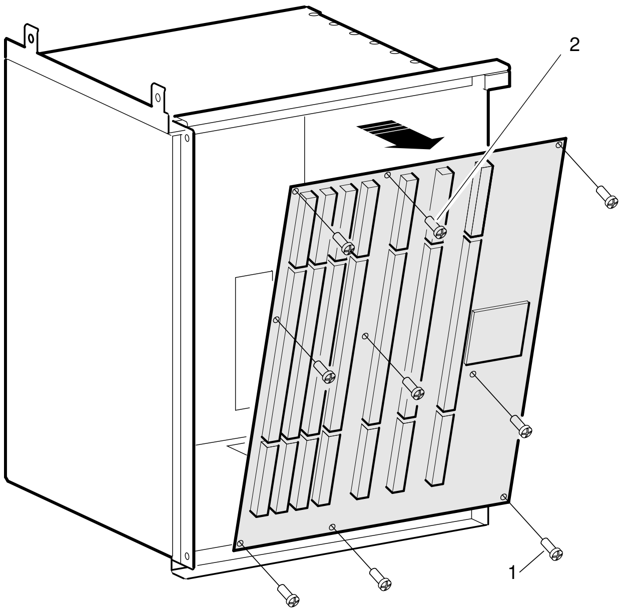
E. Discard the PCI/EISA bus compartment, along with the EISA-based backplane.

Step 9: Remove the system backplane.

A. Remove and set aside the 9 screws.

B. Remove and discard the system backplane.

Figure 3-13: Removing the System Backplane



This completes the hardware disassembly. You are ready to upgrade the hardware, as described next.

Hardware Upgrade Procedure

Note

Unless otherwise specified, you can install components by reversing the steps illustrated in the disassembly procedure.

Before You Begin

Before you begin the installation, check that the speaker cable is still engaged in the remote I/O board.

Step 1: Assemble the new PCI/EISA compartment.

Assemble the new PCI/EISA compartment (70-32504-01) and attach it to the system card cage, reusing the 8 screws you reserved earlier.

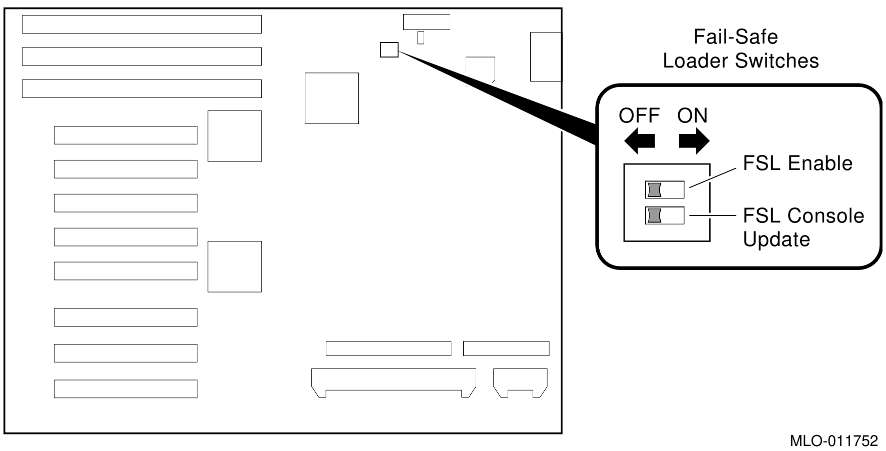
Step 2: Enable FSL update switch on new system bus backplane.

A. Locate the 2 fail-safe loader (FSL) switches on the new system bus backplane.

B. Make sure the FSL enable switch (top switch) is pushed to the left (disabled).

C. Using a small implement, set the FSL console update switch (bottom switch) to the right (enabled). This will allow writes to the FSL. You will be updating the FSL as part of the firmware update described in Chapter 4.

Figure 3-14: FSL Update Switch



Step 3: Install the new system bus backplane

To install the new system bus backplane (54-24281-01), see Figure 3-13, and start the screws labeled **1** and **2** in the illustration first. Then start the remaining screws, but do not tighten them until the PCI/EISA backplane is installed.

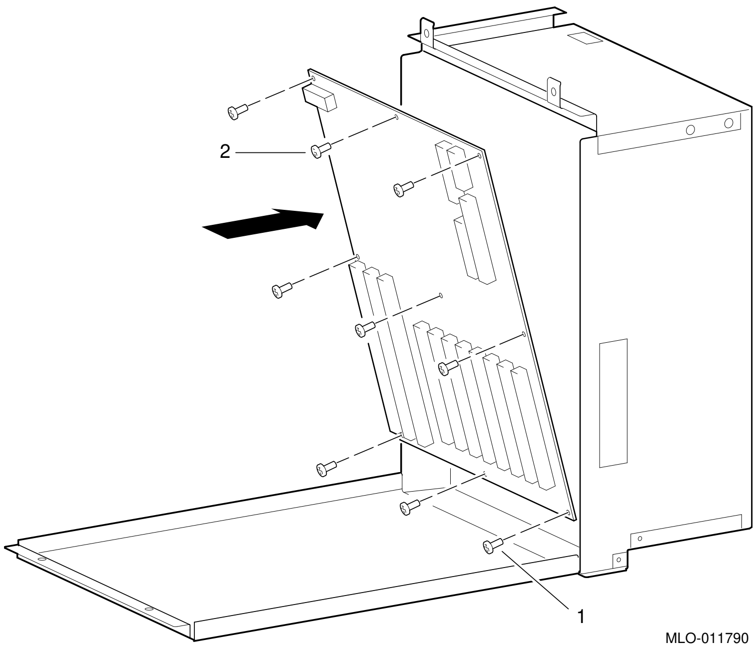
Step 4: Install the new PCI/EISA backplane.

A. Attach the PCI/EISA backplane (54-24283-01) to the system bus backplane, making sure the 2 boards are firmly engaged.

B. Start the screws labeled **1** and **2** in the illustration first. Start the remaining screws, and then tighten all 9 screws in the PCI/EISA backplane.

C. Tighten the 9 screws in the system bus backplane.

Figure 3-15: Installing PCI/EISA Backplane



D. See Figure 3-11 to reattach the 4 power bus bars into the system bus backplane. Using the screws you reserved, torque to 9.0 inch-pounds +/– 20%.

Warning

To prevent serious personal injury and equipment damage, attach the power bus bars as shown in Figure 3-11.

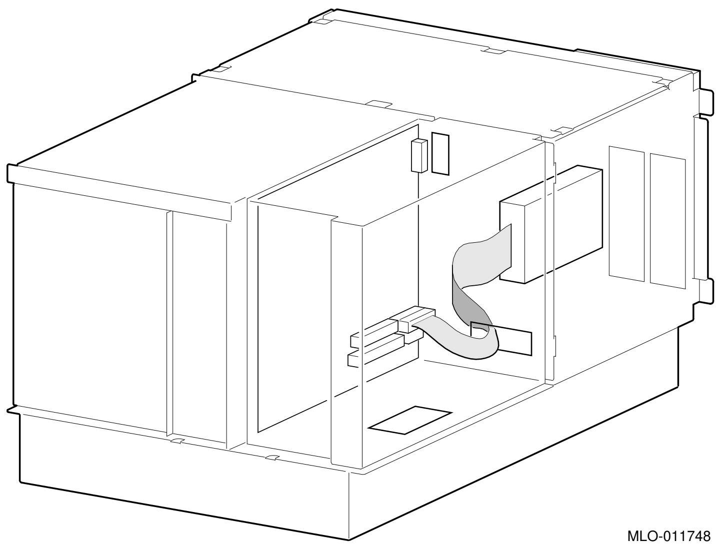
Step 5: Remove and replace floppy cable and SCSI bus cable.

A. Remove the 34-conductor floppy drive cable and install the new floppy drive cable from the PCI/EISA backplane to the floppy.

Note

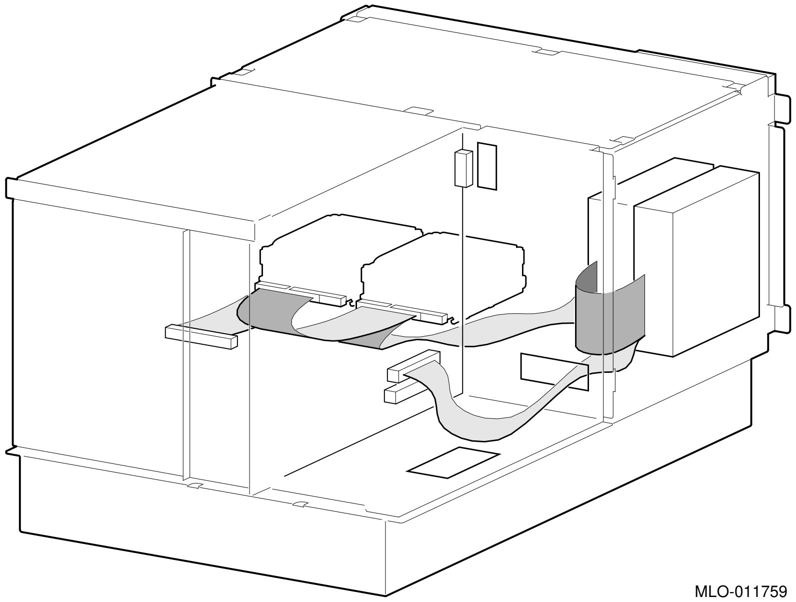
The RX26-AA floppy drive circuit board has a notch that is not the key for the cable. Orient the cable with the key away from the circuit board.

Figure 3-16: Installing New Floppy Cable (17-04085-01)



B. Remove the 50-conductor SCSI cable and install the new SCSI cable from the PCI/EISA backplane to each removable media device (up to 2) and to each hard drive (up to 2). Refer to Figure 3-17.

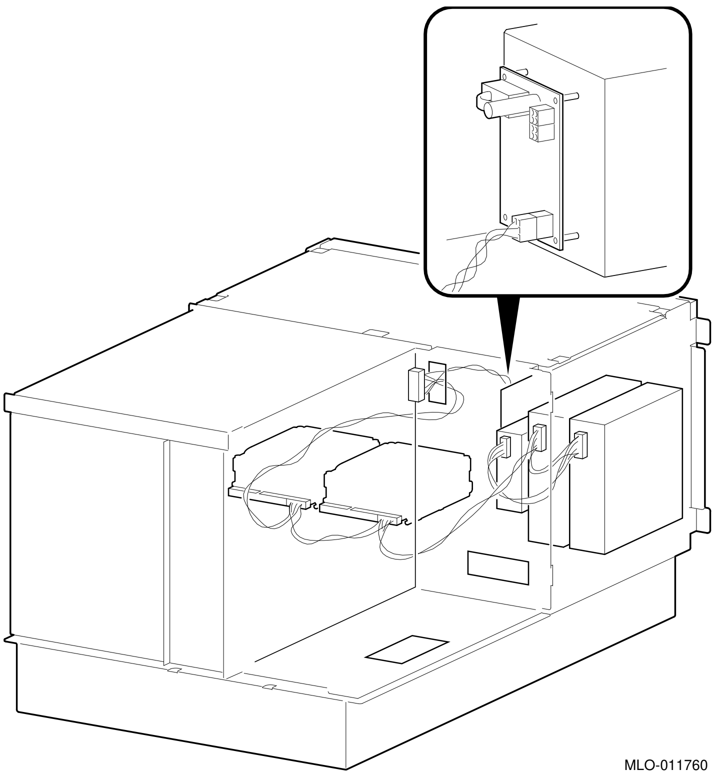
Figure 3-17: Installing New SCSI Cable (17-04203-01)



Step 6: Reconnect the fan power cable.

A. Reconnect the fan power cable to the top connector on the PCI/EISA backplane.

Figure 3-18: Reconnecting Fan Power Cable



B. Replace the fan assembly.

C. Replace the top cover and tighten the 6 quarter-turn fasteners.

Step 7: Reinstall the rear half of the enclosure.

A. Feed the OCP cable, remote I/O cable, SCSI cable, and floppy cable back through the PCI/EISA compartment. Avoid pinching the cables.

B. Insert and tighten the 4 screws to reattach the rear half of the enclosure to the chassis.

Step 8: Reattach power cables.

A. Open the bottom door and attach the power control cable and 12V cable to their connectors beneath the new system backplane.

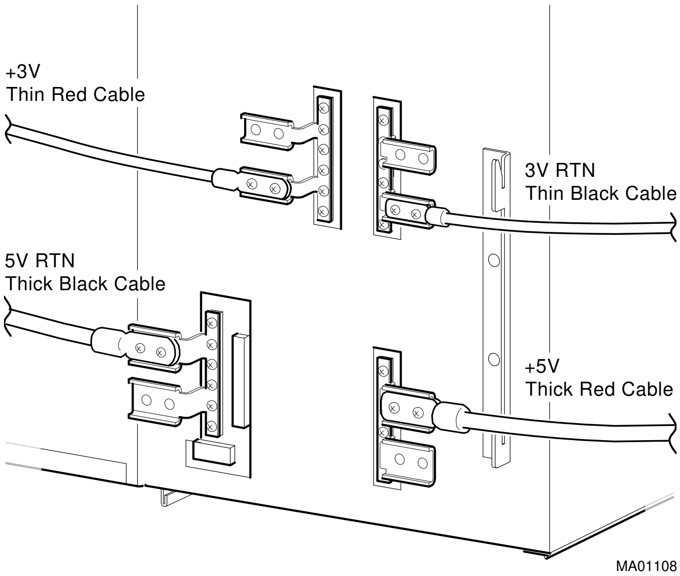
B. See Figure 3-19 to reattach the 3V and 5V leads to the power bus bars. The screws you reserved are torqued to 19.6 inch-pounds +/– 20%.

Caution

The power bus bars must be torqued properly or the system may not operate.

C. Close the bottom door and tighten the quarter-turn fasteners.

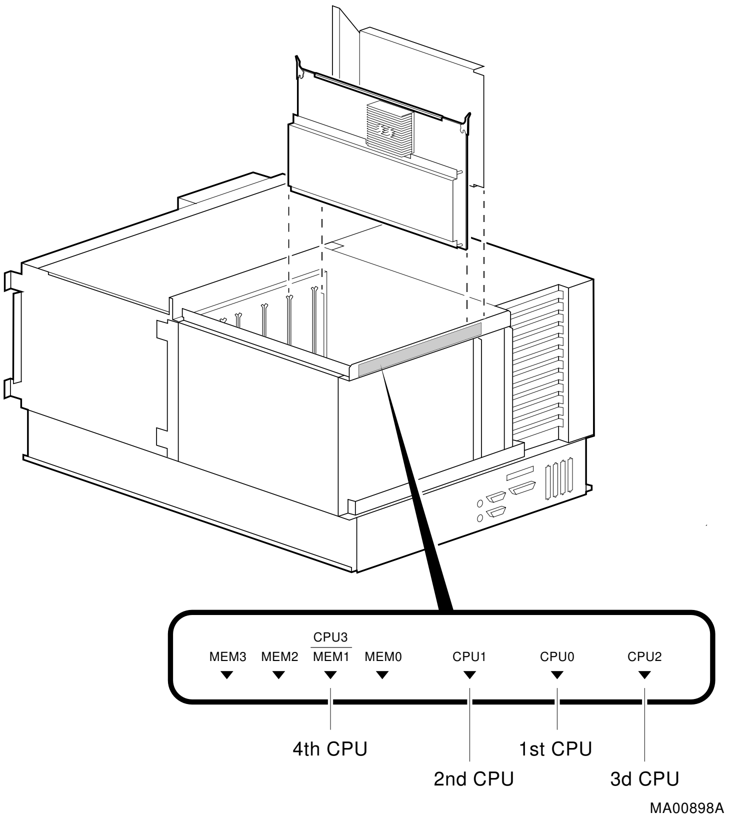
Figure 3-19: Reattaching 3V and 5V Leads



Step 9: Reinstall system bus modules.

A. Reinstall CPUs, memories, and plastic fillers.

Figure 3-20: System Bus Module and Filler Installation



Caution

Empty slots adjacent to populated slots require a plastic filler to be inserted.

B. Replace the cover and tighten the 2 captive screws.

Step 10: Reinstall PCI/EISA modules.

The AlphaServer 2100A system backplane has 3 EISA slots and 8 PCI slots. The kit provides extra blank plates for PCI/EISA windows, if needed.

Note

Before reinstalling EISA and PCI modules, consult the *AlphaServer 2100A Hardware Release Notes* (EK-2100A-CL) shipped with this document. The release notes provide configuration guidelines and restrictions to assure optimal operation of options in PCI slots.

Step 11: Reattach the PCI/EISA compartment cabling.

Plug the OCP cable, floppy cable, SCSI cable, and remote I/O cable into the PCI/EISA backplane.

Step 12: Secure the PCI/EISA compartment door.

A. Close the door and tighten the 2 captive screws.

B. Slide the system back into the cabinet.

Step 13: Reconnect external cables and power supply.

A. Reconnect external cables into PCI/EISA modules.

B. Plug in the power supply.

Step 14: Re-label the system.

A. Fill in the model number conversion label (36-15946-02):

MODEL CHANGED

FROM: BA741-A9
TO: BA744-A9

B. Fill in the power ratings label (36-17674-00):

Model:	Series BA744		
SN	Repeat BA741 serial number		
Hz	50–60	V ~	100–120/220–240
W	1200	A	10/5

C. Attach the labels to the system on the rear or left rear of the chassis.

Next Steps

This completes the hardware upgrade. You now need to update the system firmware, as described in Chapter 4.

4

Updating System Firmware

This chapter provides instructions for updating the SRM and ARC console firmware and the fail-safe loader.

You should be at step 4 of the following upgrade process.

Caution

The fail-safe loader (FSL) update switch on the system backplane must be enabled before you can update the fail-safe loader. Refer to the hardware upgrade instructions in Chapter 2 or 3, as appropriate.

Upgrade Process

1. Update the OpenVMS or Windows NT operating system. Skip this step for Digital UNIX systems.
2. Record any custom configuration information stored in NVRAM.
3. Upgrade the system hardware.
4. **Update the system firmware and fail-safe loader.**
5. Rebuild the EISA and PCI configuration, and update the RAID firmware, if necessary.
6. Install Digital UNIX.
7. Restore or set up any custom configuration information.

AlphaServer 2100A Firmware Update Procedure

The firmware update procedure is the same for all AlphaServer 2100A models, except for the name of the bootfile:

Model	Bootfile Name
4/200, 4/233, 4/275	slupdate.exe
5/250, 5/300	glupdate.exe

Step 1: Clear SRM and ARC NVRAM.

A. Press the Halt button in, then power on the system.

B. Clear SRM and ARC NVRAM:

```
P00>>> clear_srm_nvram
P00>>> clear_arc_nvram
```

C. Set the operating system type to openvms.

```
P00>>> set os_type openvms
```

D. If you only have a graphics head, set the console environment variable to graphics:

```
P00>>> set console graphics
```

E. Press the Halt button to release it.

Step 2: Update the SRM and ARC ROM images.

A. Insert the firmware update CD-ROM.

B. From the `P00>>` console prompt, enter the boot command, where `dka600` represents the CD-ROM device name.

```
P00>>> boot -fl 0,a0 dka600
.
.
.
```

C. After a series of initialization messages, a `Bootfile:` prompt is displayed. At the `Bootfile:` prompt, enter the bootfile name for your system.

`Bootfile:` **`[alpha2100]slupdate.exe`** !bootfile for 4/nnn systems

or

`Bootfile:` **`[alpha2100]glupdate.exe`** !bootfile for 5/nnn systems

After a series of messages, the loadable firmware update utility banner is displayed:

```
***** Loadable Firmware Update Utility *****
-------------------------------------------------------------
Function    Description
-------------------------------------------------------------
Display      Displays the system's configuration table.
Exit         Done exit LFU (reset).
List         Lists the device, revision, firmware name, and update
             revision.
Readme       Lists important release information.
Update       Replaces current firmware with loadable data image.
Verify       Compares loadable and hardware images.
? or Help    Scrolls this function table.
-------------------------------------------------------------
```

D. At the `UPD>` prompt, enter the `list` command to list the current revision, firmware file name, and update revision.

```
UPD> list
```

E. Update the firmware.

```
UPD> upd

Confirm update on:
arcflash
srmflash
[Y/(N)]y

WARNING: updates may take several minutes to complete for each
device.

.
.
.

UPD>
```

Step 4: Exit the loadable firmware utility.

```
UPD> exit
```

Answer yes to the following prompt:

```
Do you want to do a manual update [y/(n)] y
```

Step 5: Update the fail-safe loader ROM image.

A. At the `P00>>>` prompt, enter the following:

```
P00>>> update_fsl
(update -path fslrom -target fslflash)
new: <new_firmware_revision>
old: <existing_firmware_revision>
```

B. Enter Y at the “`Do you really want to continue [Y/N]?:`” prompt.

FEPROM UPDATE UTILITY

CAUTION: EXECUTING THIS PROGRAM WILL CHANGE YOUR CURRENT ROM!

```
Do you really want to continue [Y/N]? : Y
```

DO NOT ATTEMPT TO INTERRUPT PROGRAM EXECUTION!
DOING SO MAY RESULT IN LOSS OF OPERABLE STATE.

```
The program will take at most several minutes.
Setting to all 0s...
Setting to all 1s...
Programming...
Verifying...
Update successful
```

Note

If the update hangs at “Setting to all 0s,” you have probably forgotten to enable the FSL update switch. Refer to the instructions in Chapter 2 or 3, as appropriate.

C. Press the On/Off switch to turn the system off.

Step 6: Disable the fail-safe loader update switch.

To prevent accidental corruption of the fail-safe loader, it is recommended that you disable the fail-safe loader update switch.

A. Make sure the system is turned off.

B. Access the system backplane.

C. Locate the fail-safe loader (FSL) switches on the system backplane. Refer to Figure 2-3 for pedestal system or Figure 3-14 for rackmount system.

D. Make sure the FSL enable switch (top switch) is set to the left (disabled).

E. Using a small implement, set the FSL console update switch (bottom switch) to the left (disabled).

F. Replace doors and panels and turn on the system.

Next Steps

This completes the firmware update. You now need to update your EISA configuration, and your StorageWorks RAID controller firmware (if applicable), as described in Chapter 5.

5 Updating Configuration Data

This chapter explains how to update your EISA configuration data, using the EISA Configuration Utility. If your system is configured with a StorageWorks RAID controller, you should also update your RAID controller firmware if your existing controller firmware is earlier than V2.16 for EISA controllers and V2.36 for PCI controllers.

You should be at step 5 of the following upgrade process.

Note

If the system is going to run Digital UNIX, install the operating system as the last step of the upgrade.

Upgrade Process

1. Update the OpenVMS or Windows NT operating system. Skip this step for Digital UNIX systems.
2. Record any custom configuration information stored in NVRAM.
3. Upgrade the system hardware.
4. Update the system firmware and fail-safe loader.
5. **Rebuild the EISA and PCI configuration, and update the RAID firmware, if necessary.**
6. Install Digital UNIX.
7. Restore or set up any custom configuration information.

Rebuilding EISA Configuration Data

Use the EISA Configuration Utility diskette, minimum V1.8, provided with the upgrade kit, to rebuild EISA configuration data.

Caution

There are 2 variants of the ECU, one for OpenVMS and Digital UNIX and another for Windows NT. Be sure to use the appropriate ECU diskette for your operating system.

Step 1: Start the ECU

Insert the ECU diskette in the drive. At the `P00>>>` console prompt, enter the `ecu` command. The ARC firmware will load and then the ECU will boot from the diskette. This process takes several minutes, at most.

```
P00>>> ecu

loading ARC firmware

resetting all I/O busses

.
.
```

When the load process is complete, an informational screen is displayed, telling you that you need to fix your configuration data. Then the ARC Boot menu is displayed.

```
Boot menu:

      Boot Windows NT
      Boot an alternate operating system
      Run a program
      Supplementary menu...

Use the arrow keys to select, then press Enter.
```

Step 2: Correct your configuration data.

Using the cursor control keys:

A. From the Boot menu, select `Supplementary menu.`

B. From the Supplementary menu, select: `Set up the system.`

C. From the Setup menu, select each of the following choices in order.

```
Set system time <Enter>
Set default environment variables <Enter>
Set default configuration <Enter>
```

If you are running Digital UNIX or OpenVMS, choose the defaults by pressing `<Enter>` at all the prompts.

If you are running Windows NT, select the options appropriate for your configuration. For example, set the system time.

D. After you set the default configuration, select `Run EISA configuration utility from floppy` on the Setup menu.

Step 3: Step through the ECU dialog boxes.

The ECU displays a few dialog boxes. When these begin to appear do the following:

A. At the Main Menu dialog box, press `<Enter>`.

B. If an ID mismatch dialog box is displayed, press `<Enter>` and wait about 30 seconds.

C. At the Main Menu dialog box, select `STEP5: Save and Exit`, and press `<Enter>`.

D. Press `<Enter>` to save the configuration.

E. Press `<Enter>` again to reboot the ARC console. The ARC firmware will reboot and display the Boot menu.

F. If your system is configured with a StorageWorks RAID controller, go to the next section of this chapter. If you do not have a StorageWorks RAID controller, go to Chapter 6.

Note

For information on configuring ISA devices, refer to the system Owner's Guide.

Updating the StorageWorks RAID Controller Firmware

If your system is configured with a StorageWorks RAID controller with firmware earlier than V2.16 for EISA controllers and V2.36 for PCI controllers, it is strongly recommended that you update the controller firmware.

Use the standalone configuration utility V3.11 supplied on the Firmware Update CD-ROM. Although the utility can be executed from the CD-ROM, the RAID configurations cannot be saved to CD-ROM. It is recommended that you create a utility floppy, as described in Step 1, below. For complete instructions on using the RAID standalone configuration utility, refer to the *StorageWorks RAID Array 200 Subsystems Family Controller Installation and Standalone Configuration Utility User's Guide.*

Caution

Using a version of the standalone configuration utility earlier than V3.11 will render your RAID controller inoperable.

Before updating the RAID firmware, do a backup of the existing configuration for each RAID controller. Also record the setups currently in ECU.

Step 1: Create a standalone configuration utility floppy.

Note

Systems running Digital UNIX or OpenVMS will need to create a utility floppy (steps A, B, and C) on a PC equipped with a CD-ROM drive.

A. Insert the Firmware Update CD-ROM into the CD-ROM drive.

B. Insert a diskette into the diskette drive.

C. At the DOS prompt, copy the RAID Standalone Configuration Utility for AXP Systems from the CD-ROM onto the diskette drive.

```
c:> copy e:\utility\swxcrmgr\*.* a:
```

Step 2: Run the utility to set controller parameters.

A. On the AlphaServer system, load the ARC firmware.
   On systems configured for Windows NT, access the Boot menu.
   On systems configured for Digital UNIX or OpenVMS, enter the `arc` command at the console prompt.

B. From the Boot menu, select `Run a program.`

C. If you are running the utility from the floppy you created, enter the following at the `Program to run:` prompt:

   `a:swxcrmgr`

   Or, if you are running the utility from the CD-ROM, enter:

   `cd:\utility\swxcrmgr\swxcrmgr.exe`

   Note that if you run the utility from the CD-ROM, you cannot save the configuration unless you insert a FAT-formatted floppy in the floppy drive.

Note

If you are installing a new controller or if the drives on the controller are marked as failed, enter `a:swxcrmgr -o` from the floppy or `cd:\utility\swxcrmgr\swxcrmgr.exe -o` from the CD-ROM.

D. From the Main menu, select `Controller Setup`. The Edit/View Parameters menu is displayed. Use the arrow keys to step through the menu items. Set the Hardware Parameters and Data Parameters as shown in the table below. Set the SCSI Xfr Parameters and Startup Parameters using the values you previously recorded for these parameters.

Hardware Parameters	
Battery-Backup	Disabled (enabled if you have battery backup)
StorageWorks Fault Management	Enabled
Data Parameters	
Default rebuild rate	50
Stripe size (K bytes)	8
Controller read ahead	Disabled

E. After you have set the controller parameters, press the Esc key. At the `Save altered controller configuration?` prompt, select `Yes` to save the parameters you have set. Note that if you ran the utility from the CD-ROM, you cannot save the parameters.

F. Exit from the utility. You will be returned to the ARC firmware Boot menu. You are ready to update the RAID controller firmware, as described next.

Step 3: Update the RAID controller firmware.

B. From the Boot menu, select `Run a Program`. If you are running the utility from the floppy, enter the following at the `Program to Run:` prompt:

a:swxcrfw *filename.xxx*

Or, if you are running the utility from the CD-ROM, copy the *firmware.xxx* file to a FAT-formatted floppy. For example:

c: copy CD:\utility\swxcrmgr\swxcrfw*x.xxx* a:

Keep the floppy disk in the drive, then enter:

cd:\utility\swxcrmgr\swxcrfw *filename.xxx*

Filename.xxx is the firmware filename, and *xxx* is the firmware version you want to load. For multiple controllers, update EISA firmware files first, followed by PCI files. Review the following examples.

Filename for Single EISA Controller
swxcrfw swxcrfwa.216

Filename for Single PCI Controller
swxcrfw swxcrfwp.236

Filenames for Multiple Controllers
swxcrfw swxcrfwa.216 swxcrfwa.216 swxcrfwp.236

C. The system displays a series of messages. The final message asks you to cycle the system power. Press the Reset button. Access the Windows NT Boot menu.

D. At the `Program to Run:` prompt, enter `a:swxcrmgr` from the floppy (or `cd:\utility\swxcrmgr` from the CD-ROM) to start the standalone configuration utility, and view the firmware version displayed on the Main menu to verify the update.

- For a PCI controller, exit the utility and remove the standalone utility diskette from the drive. This completes the firmware update for PCI.
- For an EISA controller that was V1.99 or earlier before the update, select the appropriate new .CFG file for your controller and copy it to the ECU diskette. The table that follows identifies the .CFG files.
- Run the ECU again to load the new CFG file.

.CFG Files

!MLX0077.CFG	1-channel controller running Windows NT
!MLX0075.CFG	3-channel controller running Windows NT
AMLX0077.CFG	1-channel controller running Digital UNIX or OpenVMS
AMLX0075.CFG	3-channel controller running Digital UNIX or OpenVMS

Note

If you do not have a PC available to copy the .CFG file to your ECU diskette, do the following:

1. Run the ECU and delete the controller board.
2. Add the new controller board.
3. Remove the ECU diskette and insert the standalone utility diskette.
4. At the Add Configuration (CFG) file menu, select the appropriate choice and press Enter.
5. At the `Destination Diskette` prompt, remove the standalone utility diskette and insert the ECU diskette, making sure it is write-enabled, then press Enter.
6. At the confirmation prompt, press Enter, and at the highlighted slot, press Enter again. The board will now appear on the display.
7. When you have finished adding boards, press F10 to exit.

Next Steps

Go to Chapter 6 to complete the upgrade.

6

Completing the Upgrade

This chapter describes how to complete the system upgrade. You should be at step 6 or step 7 of the upgrade process, depending on your operating system.

Upgrade Process

1. Update the OpenVMS or Windows NT operating system. Skip this step for Digital UNIX systems.
2. Record any custom configuration information stored in NVRAM.
3. Upgrade the system hardware.
4. Update the system firmware and fail-safe loader.
5. Rebuild the EISA and PCI configuration, and update the RAID firmware, if necessary.
6. **Install Digital UNIX.**
7. **Restore or set up any custom configuration information.**

Installing Digital UNIX

If the upgraded system will be running Digital UNIX, install the Digital UNIX operating system at this time. The operating system CD-ROM is shipped with the hardware upgrade kit. Consult the operating system installation/upgrade documents for instructions on installing the Digital UNIX operating system. After you install Digital UNIX, go to the next section to complete the upgrade.

Restoring Custom Configurations

Use the custom configuration information you recorded prior to the hardware upgrade to restore any customizations to be stored in NVRAM. Refer to the *AlphaServer 2000/2100/2100A Firmware Reference Guide* for information on setting specific environment variables.