DIGITAL Custom AlphaServer 4100 PCI Backplane

Upgrade Guide

Part Number: EK-CATUP-UG. A01

November 1997

Digital Equipment Corporation
Maynard, Massachusetts

Table of Contents

1 Introduction

2 Upgrade Procedure

Examples

Figures

Tables

Preface

Overview

This guide provides the information necessary to upgrade the custom AlphaServer 4100 system PCI backplane so that DIGITAL PowerStorm graphics options can be installed.

Intended Audience

This guide is intended for DIGITAL service personnel or qualified Self-maintenance customers who are familiar with installing computer systems, and for system managers and others who perform system management tasks.

Organization

This guide is organized as follows:

Chapter 1, Introduction – Provides an overview of 2T-CATUP hardware upgrade kit along with a parts list.

Chapter 2, Upgrade Procedure – Provides the detailed procedures for upgrading the custom AlphaServer 4100 system PCI backplane.

Related Documents

Other documents related to the custom AlphaServer 4100 system include the following:

- *DIGITAL Custom AlphaServer 4100 System Solutions Installation/Owner's/Service Guide* (EK-410LP-IN)

Conventions

This guide uses the following conventions:

Convention	Meaning
Note	A note calls the reader's attention to any item of information that may be of special importance.
Caution	A caution contains information essential to avoid damage to the equipment.
Warning	A warning contains information essential to the safety of personnel.
❶	Circled numbers provide a link between figures or examples and text.
MONOSPACE	Text displayed on the screen is shown in monospace type.
bold type	Bold type denotes user input or software commands.
Italic type	Italic type emphasizes important information, indicates variables, and indicates complete titles of manuals.

The following symbols appear on the chassis. Please review their definitions below:

This Dangerous Voltage warning symbol indicates risk of electrical shock and indicates hazards from dangerous voltage.

This Attention symbol is used to alert the reader about specific safety conditions, and to instruct the reader to read separate instructional material.

Reader's Comments

DIGITAL welcomes your comments on this or any other manual. You can send your comments to DIGITAL by mail to the following address:

Digital Equipment Corporation

Shared Engineering Services

PKO3-2/21J

129 Parker Street

Maynard, MA 01754-2199

1
Introduction

1.1 General

This chapter contains an overview of 2T-CATUP hardware upgrade kit along with a parts list.

The present custom AlphaServer 4100 PCI backplane does not provide for the distribution of 3.3 V to the PCI slots. The DIGITAL PowerStorm graphics options require 3.3 V, so the 2T-CATUP hardware upgrade kit is designed to provide the distribution of 3.3V to the PCI slots. This will allow PowerStorm graphics options to be installed in the custom AlphaServer 4100 systems. The upgrade consists of removing the original PCI backplane, replacing it with the new PCI backplane, and installing the 3.3 V power cable assembly.

1.2 Upgrade Kit Contents

The 2T-CATUP hardware upgrade kit contains the components listed in Table 1-1.

Table 1-1 2T-CATUP Hardware Upgrade Kit Components

Description	Part Number	Quantity
PCI backplane	54-24429-11	1
3.3 V power cable assembly	17-04704-01	1
Adhesive backed cable clip	12-21249-01	2
Return label	36-26123-07	1
Upgrade Guide	EK-CATUP-UG	1

2
Upgrade Procedure

2.1 Introduction

The following sections provide the procedures for performing the custom AlphaServer 4100 PCI backplane upgrade. This upgrade should take approximately 30 minutes.

In order to perform the custom AlphaServer 4100 PCI backplane upgrade, the procedures should be performed in the sequence listed below.

- Recording Customized Configurations

- Normal System Power Down

- Unpacking the Shipment

- Upgrading the Hardware

  — Extending the Chassis for Service

  — Removing the Front Top Cover

  — Removing the CD-ROM Drive

  — Removing the Power Supply Line Filter Access Cover

  — Removing the Right Side Cover

  — Removing the PCI/EISA Option Modules

  — Removing the PCI/EISA Backplane

  — Installing the New PCI Backplane and 3.3 V Power Cable Assembly

  — Completing the Hardware Upgrade

- Updating the System Firmware

- Updating EISA Configuration Data

- Restoring Custom Configurations

_____ WARNING _____

Before servicing the custom AlphaServer 4100 system chassis, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.

_____

_____**WARNING**_____

Only a qualified service person should remove and replace components in the custom AlphaServer 4100 system. A qualified service person should have the technical training and experience necessary to be aware of the hazards to which they are exposed in performing a task and the measures that should be taken to minimize the danger to themselves or other persons.

_____

Tools Required

The following tools are required for performing the custom AlphaServer 4100 system PCI backplane upgrade:

- Phillips-head screwdriver (#2)

- Flat-blade screwdriver

- Torque wrench capable of up to 20 inch-pounds, with an extension and a #2 Phillips-head tip.

2.2 Recording Customized Configurations

Before you upgrade the hardware, be sure to record any customized configuration information stored in the custom AlphaServer 4100 system NVRAM. Once you upgrade the hardware, any such customization information will be lost. It is recommended that you record the following items listed in Table 2-1, as well as any others particular to the system you are upgrading.

Table 2-1 List of Customized Configuration Data

Item	Command
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 custom AlphaServer 4100 *show config* or *show device* displays. For example, the boot device may be named differently in the new displays.

2.3 Normal System Power Down

Perform the following procedure to power down the custom AlphaServer 4100 system before performing the upgrade:

1. Perform an orderly shutdown of the DIGITAL custom AlphaServer 4100 operating system.

_____ **Note**_____

It is recommended that you back up the system disk prior to shutting down the operating system.

_____

2. Remove the front bezel from the DIGITAL custom AlphaServer 4100 chassis by pressing in at the bottom of the two pull loops ❶ on the front bezel ❷ to rotate them down and out from the bezel and using them to pull the bezel away from the chassis (see Figure 2-1).

3. Place the DC On/Off button on the DIGITAL custom AlphaServer 4100 operator control panel in the Off position. Disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.

Figure 2-1 Removing the Front Bezel
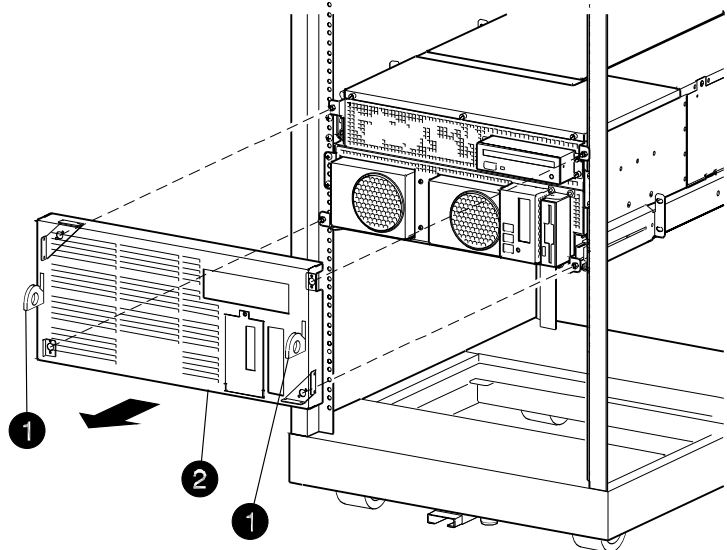
LJ-05896.DWG

2.4 Unpacking the Shipment

The 2T-CATUP hardware upgrade kit may include more than one carton. Check the packing list and the parts list in Table 1-1 to ensure that all items listed have been received.

If the equipment is damaged or if any items are missing, notify the delivery agent and contact the DIGITAL sales representative.

_____ **Note** _____

Save the shipping carton and packing material from the new PCI backplane. After performing the upgrade, the original PCI backplane that was removed during the upgrade must be returned to DIGITAL.

_____

2.5 Upgrading the Hardware

The following sections contain the procedures for disassembling the hardware in order to perform the upgrade, installing the upgrade, and reassembling the hardware. The procedures should be performed in the order they are listed.

2.5.1 Extending the Chassis for Service

_____WARNING_____

Before extending the chassis for service, ensure that the cabinet is stable and that all provided stabilizing features have been activated. The stabilizing features for the rack or cabinet are configuration dependent.

_____

Perform the following procedure to extend the custom AlphaServer 4100 system chassis for service:

1. Extend the stabilizing legs ❶ at the front of the cabinet (if stabilizing legs are provided) (see Figure 2-2).

2. Remove the front bezel (see Figure 2-1).

3. Remove the four retaining screws ❷ that secure the chassis to the front rails (see Figure 2-2).

_____**Caution**_____

Check and ensure that all cables are free to follow the chassis before extending the chassis.

_____

4. Carefully pull the chassis forward until the slides lock in the extended position.

To secure the chassis in the cabinet, press up on the left and right slide locks, and reverse steps 1 through 4 of the extension procedure.

Figure 2-2 Extending the Chassis for Service
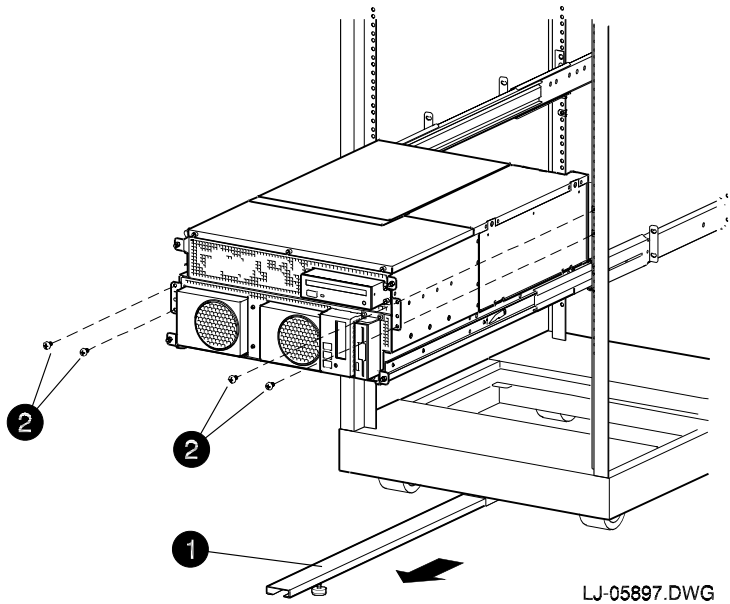
LJ-05897.DWG

2.5.2 Removing the Front Top Cover

_____WARNING_____

**Before performing the following removal and replacement procedures,
ensure that the DC On/Off button on the OCP is in the OFF position and
disconnect the power cord(s) from the power supply ac input receptacle(s) on
the front of the chassis.**

_____

_____Caution_____

Use care when removing and replacing the cover to prevent damage to the RFI
gaskets that are located around the cover and opening.

_____

Perform the following procedure to remove the front top cover:

1. Extend the chassis for service (see Section 2.5.1).

2. Loosen the three captive thumb screws ❶ on the front edge of the front top cover ❷ (see
    Figure 2-3).

3. Pull the front top cover forward until the rear edges slide out from under the retaining
    lips (see Figure 2-3).

4. Lift the front top cover off of the chassis.

To replace the front top cover, refer to Figure 2-3 and reverse steps 1 through 4 of the
removal procedure.

Figure 2-3 Removing and Replacing the Front Top Cover

LJ-05898.DWG
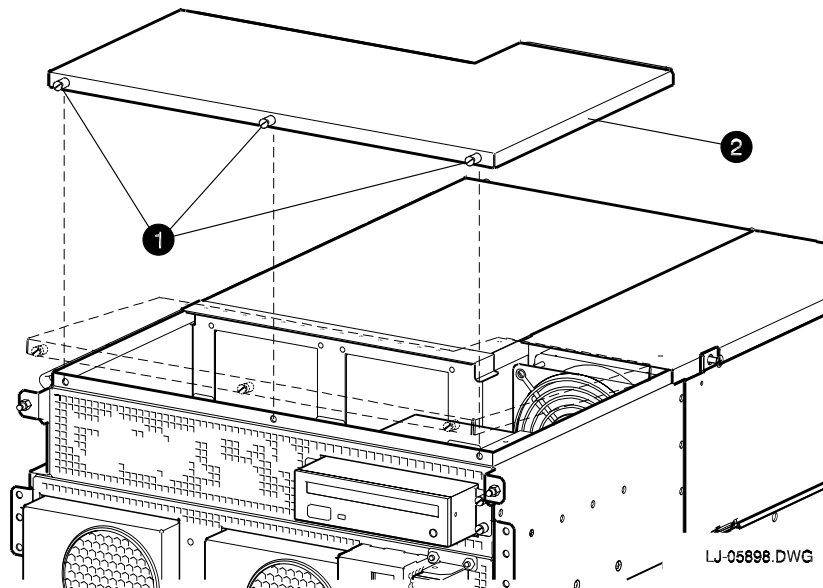
2.5.3 Removing the CD-ROM Drive

_____ WARNING _____

Before performing the following removal and replacement procedures, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.

_____

Perform the following procedure to remove the CD-ROM drive:

1. Extend the chassis for service (see Section 2.5.1).

2. Remove the front top cover (see Section 2.5.2).

3. Loosen the four captive thumb screws ❶ that secure the CD-ROM drive bracket ❷ to the front of the chassis (see Figure 2-4).

4. Slide the CD-ROM drive ❺ and bracket ❷ partially out of the chassis until the two mounting clips on the rear of the bracket come out of the two rubber grommets mounted on top of the power supply line filter access cover.

5. Disconnect the power ❸ and data ❹ cables from the rear of the CD-ROM drive (see Figure 2-4).

6. Slide the CD-ROM drive and bracket completely out of the chassis.

7. The four screws ❻ (two on each side) that secure the CD-ROM drive ❺ to the bracket ❷ (see Figure 2-4) do not have to be removed for this upgrade.

To replace the CD-ROM drive, refer to Figure 2-4 and reverse steps 1 through 6 of the removal procedure.

Figure 2-4 Removing and Replacing the CD-ROM Drive

LJ-05903.DWG

2.5.4 Removing the Power Supply Line Filter Access Cover

_____WARNING_____

Before performing the following removal and replacement procedures, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.

_____

Perform the following procedure to remove the power supply line filter access cover:

1. Extend the chassis for service (see Section 2.5.1).

2. Remove the front top cover (see Section 2.5.2).

3. Remove the CD-ROM drive (see Section 2.5.3).

4. Remove the four screws ❶ that secure the power supply line filter access cover ❷ and remove the access cover (see Figure 2-5).

To replace the power supply line filter access cover, refer to Figure 2-5 and reverse steps 1 through 4 of the removal procedure.

Figure 2-5 Removing and Replacing the Power Supply Line Filter Access Cover

LJ-5973A.DWG

2.5.5 Removing the Right Side Cover

_____ **WARNING** _____

Before performing the following removal and replacement procedures, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.
_____

_____ **Caution** _____

Use care when removing and replacing the cover to prevent damage to the RFI gaskets that are located around the four sides of the cover.
_____

Perform the following procedure to remove the right side cover:

1. Extend the chassis for service (see Section 2.5.1).

2. Loosen the two captive screws ❶ along the top edge of the right side cover ❷ (see Figure 2-6).

3. Tilt the top of the right side cover out from the chassis (see Figure 2-6).

4. Lift the right side cover until the tabs along the bottom edge come out of the slots ❸ in the chassis, and then pull the right side cover out and away from the chassis.

To replace the right side cover, refer to Figure 2-6 and reverse steps 1 through 4 of the removal procedure.

Figure 2-6 Removing and Replacing the Right Side Cover

LJ-05901.DWG
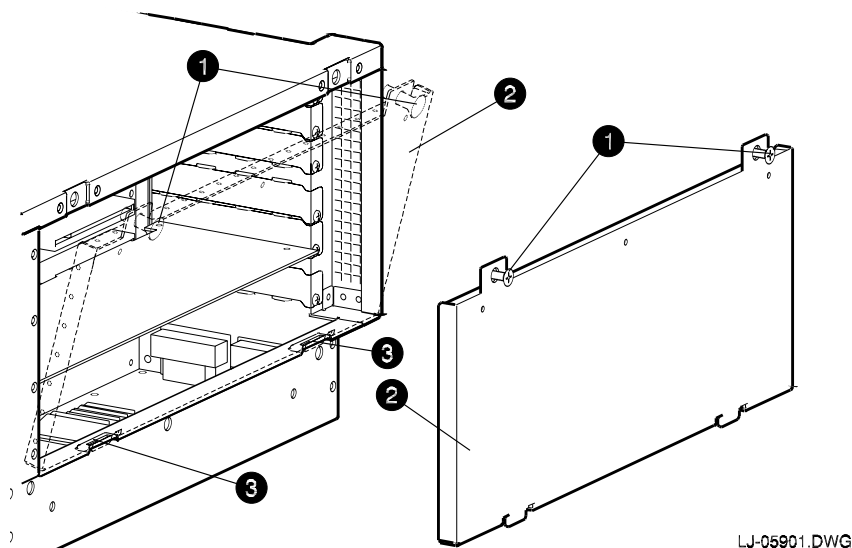
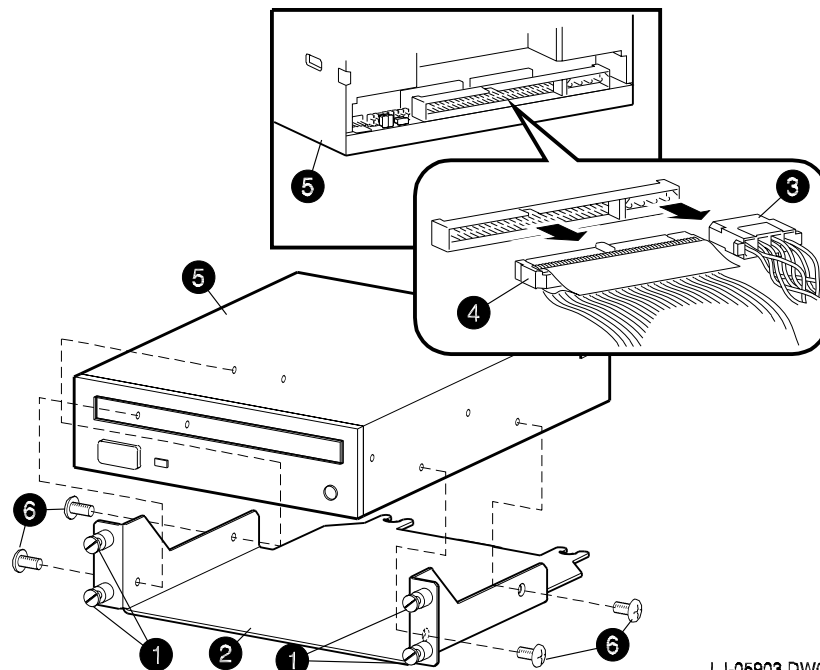## 2.5.6 Removing the PCI/EISA Option Modules

_____WARNING_____

Before performing the following removal and replacement procedures, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.
_____

_____Caution_____

DO NOT install a full length PCI option in the 6th (bottom) slot of the PCI/EISA card-cage area.
_____

Perform the following procedure to remove PCI/EISA option modules:

1. Extend the chassis for service (see Section 2.5.1).

2. Remove the right side cover (see Section 2.5.5).

3. Disconnect all cables that are connected to the PCI/EISA option modules from the rear of the chassis. Label these cables for reconnection.

4. Put on an antistatic wriststrap.

_____Caution_____

An antistatic wriststrap *must* be worn when handling any module to prevent damage to the module.
_____

5. Remove the screw ❶ that secures the PCI/EISA option module ❷ in its slot (see Figure 2-7).

6. Slide the PCI/EISA option module out of the slot (see Figure 2-7).

To replace the PCI/EISA option modules, refer to Figure 2-7 and reverse steps 1 through 6 of the removal procedure.

Figure 2-7 Removing and Replacing a PCI/EISA Option Modules

LJ-05884.DWG
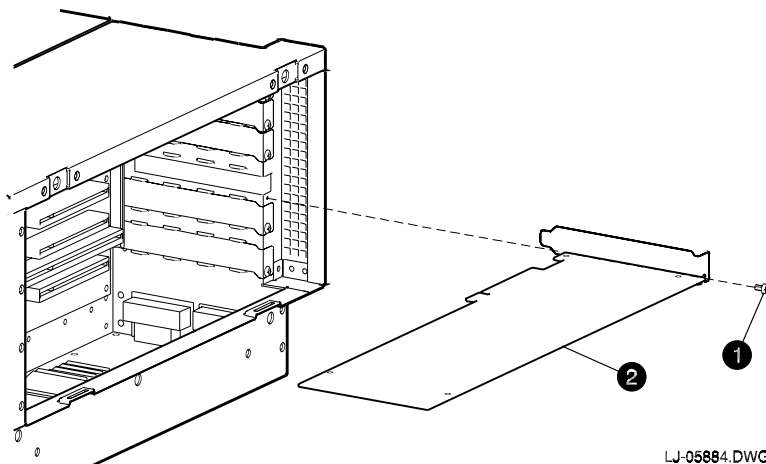
2.5.7 Removing the PCI/EISA Backplane
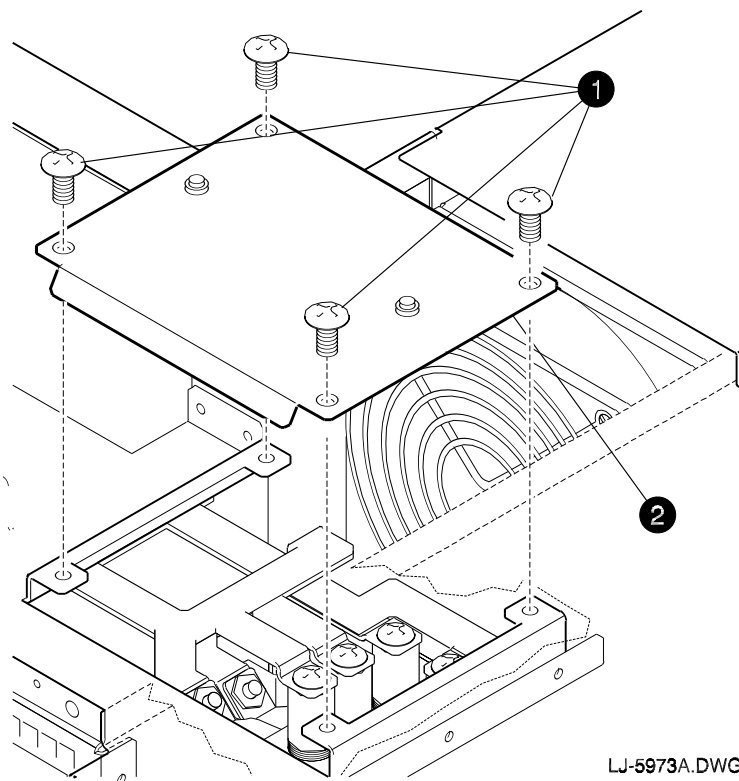
_____ **WARNING** _____

Before performing the following removal and replacement procedures, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.

_____

Perform the following procedure to remove the PCI/EISA backplane:

1. Extend the chassis for service (see Section 2.5.1).

2. Remove the right side cover (see Section 2.5.5).

3. Remove all of the PCI/EISA option modules (see Section 2.5.6).

4. Disconnect the eight cables from the PCI/EISA backplane.

5. Remove the nine screws ❶ that secure the PCI/EISA backplane ❷ to the card-cage wall (see Figure 2-8).

6. Pull straight out on the PCI/EISA backplane to disconnect it from the system bus to PCI bus module.

7. Remove the PCI/EISA backplane from the PCI/EISA card-cage.

To replace the PCI/EISA backplane, refer to Figure 2-8 and reverse steps 1 through 7 of the removal procedure. Ensure that the jumper on the new PCI/EISA backplane is set to match the jumper on the backplane that was removed.

Figure 2-8 Removing the PCI/EISA Backplane
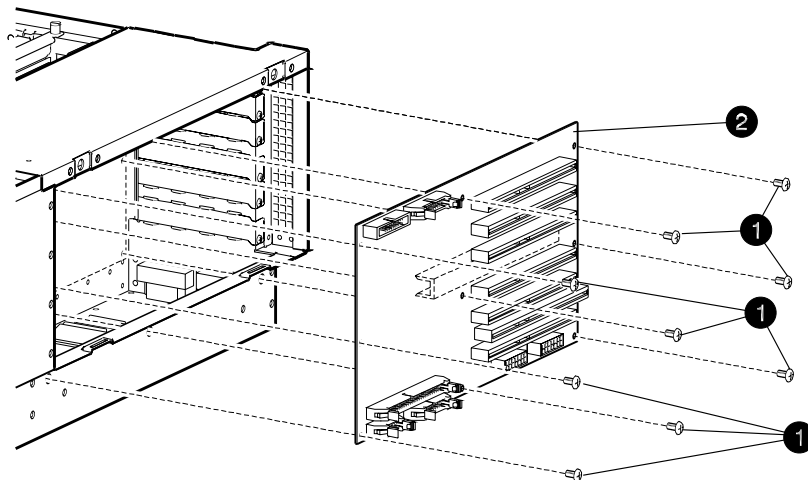
LJ-05916.DWG

2.5.8 Installing the New PCI Backplane and 3.3 V Power Cable Assembly

_____WARNING_____

Before performing the following installation procedures, ensure that the DC On/Off button on the OCP is in the OFF position and disconnect the power cord(s) from the power supply ac input receptacle(s) on the front of the chassis.

_____

Perform the following procedure to install the new PCI/EISA backplane and 3.3 V power cable assembly:

1. Insert the new PCI/EISA backplane into the PCI/EISA card-cage.

2. Push straight in on the new PCI/EISA backplane to connect it to the system bus to PCI bus module.

3. Install the nine screws ❶ that secure the new PCI/EISA backplane ❷ to the card-cage wall (see Figure 2-9).

4. Reconnect the eight cables to the new PCI/EISA backplane.

5. Connect the two connectors ❸ on the 3.3 V power cable assembly to the two connectors ❹ on the upper right edge of the new PCI/EISA backplane (see Figure 2-9).

6. Remove the paper from the two adhesive backed cable clips ❺ and attach them along the left side of the card-cage roof (see Figure 2-9).

7. Route the 3.3 V power cables through the two cable clips and out through the opening in the upper-left rear area of the card-cage to the power supply line filter.

Figure 2-9 Installing the PCI Backplane and 3.3 V Power Cable Assembly

LJ6239A.AI4
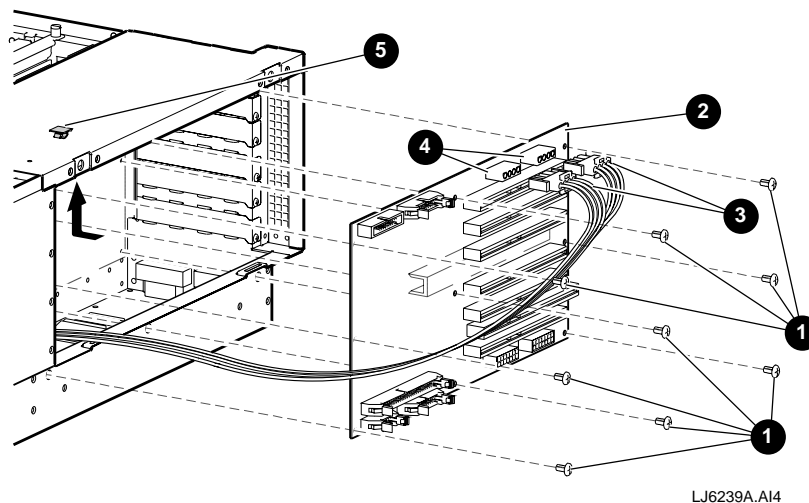
8. Remove the two screws ❺ that secure the power supply bus bars to the 3.3 V post ❹ and the return post ❷ on the power supply line filter (see Figure 2-10).

9. Using one of the two screws ❺, secure the black cable ❶ of the 3.3 V power cable assembly to the return post ❷ on the power supply line filter (see Figure 2-10). Torque this screw to 20 inch-pounds.

10. Using the other screw ❺, secure the orange cable ❸ of the 3.3 V power cable assembly to the 3.3 V post ❹ on the power supply line filter (see Figure 2-10). Torque this screw to 20 inch-pounds.

Figure 2-10 Connecting Cables to Power Supply Line Filter
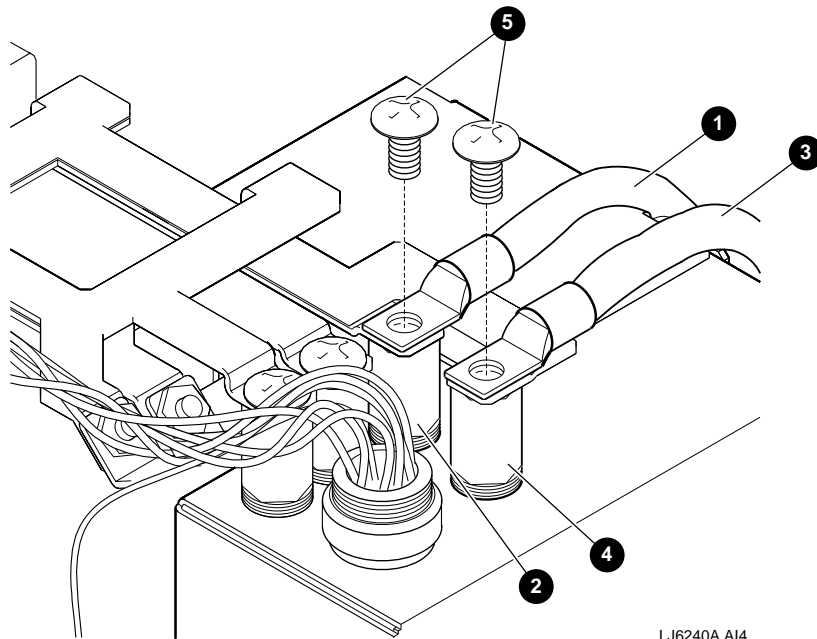
LJ6240A.AI4

2.5.9 Completing the Hardware Upgrade

Perform the following procedure to complete the hardware upgrade:

1. Reinstall the PCI/EISA option modules (see Section 2.5.6).

2. Reinstall the right side cover (see Section 2.5.5).

3. Reinstall the power supply line filter access cover (see Section 2.5.4).

4. Reinstall the CD-ROM drive (see Section 2.5.3).

5. Reinstall the front top cover (see Section 2.5.2).

6. Secure the custom AlphaServer 4100 chassis in the cabinet (see Section 2.5.1).

7. Reconnect the power cord(s) to the power supply ac input receptacle(s) on the front of the chassis.

8. Reinstall the front bezel by aligning the ball-stud receivers on the front bezel with the ball studs on the front of the system and pressing the front bezel into place.

9. Apply power to the custom AlphaServer 4100 system chassis, by placing the DC On/Off button on the OCP to the ON position.

2.6 Updating the System Firmware

Use the Loadable Firmware Update (LFU) utility to update system firmware.

You can start LFU from either the SRM console or the AlphaBIOS console.

- From the SRM console, start LFU by issuing the **lfu** command (see Example 2-1). Also from the SRM console, LFU can be booted from the Alpha CD-ROM (V3.7 or later), as shown in Example 2-2.

- From the AlphaBIOS console, select **Upgrade AlphaBIOS** from the **AlphaBIOS Setup** screen (see Figure 2-11).

Example 2-1 Starting LFU from the SRM Console

```
P00>>> lfu


          ***** Loadable Firmware Update Utility *****


Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: cda0
.
.
.
UPD>
```

Example 2-2 Booting LFU from the CD-ROM

```
P00>>> show dev ncr0
polling ncr0 (NCR 53C810) slot 1, bus 0 PCI, hose 1   SCSI Bus ID 7
dka500.5.0.1.1     DKa500                    RRD45  1645
P00>>> boot dka500
(boot dka500.5.0.1.1 -flags 0,0)
block 0 of dka500.5.0.1.1 is a valid boot block
.
.
.
jumping to bootstrap code


The default bootfile for this platform is
        [AS4X00]AS4X00_LFU.EXE
Hit <RETURN> at the prompt to use the default bootfile.
Bootfile: <CR>


Starting Firmware Update Utility
```

```
                    ***** Loadable Firmware Update Utility *****
  .
  .
  .
UPD>
```

Figure 2-11 Starting LFU from the AlphaBIOS Console

```
┌──────────────────────────────────────────────────────────────────────┐
│                          AlphaBIOS Setup                               │
├──────────────────────────────────────────────────────────────────────┤
│   ┌──────────────────────────────────────────────────┐                 │
│   │  Display System Configuration...                 │                 │
│   │  Upgrade AlphaBIOS                               │                 │
│   │  Hard Disk Setup                                 │                 │
│   │  CMOS Setup...                                   │                 │
│   │  Install Windows NT                              │                 │
│   │  Utilities                              ►        │                 │
│   │  About AlphaBIOS...                              │                 │
│   └──────────────────────────────────────────────────┘                 │
│                                                                        │
│  ┌───────────────────────────────────────────────────────────────┐    │
│  │ Press ENTER to upgrade your AlphaBIOS from floppy or CD-ROM.   │    │
│  │                                                               │    │
│  └───────────────────────────────────────────────────────────────┘    │
│                                                                        │
│  ESC=Exit                                                              │
└──────────────────────────────────────────────────────────────────────┘
```
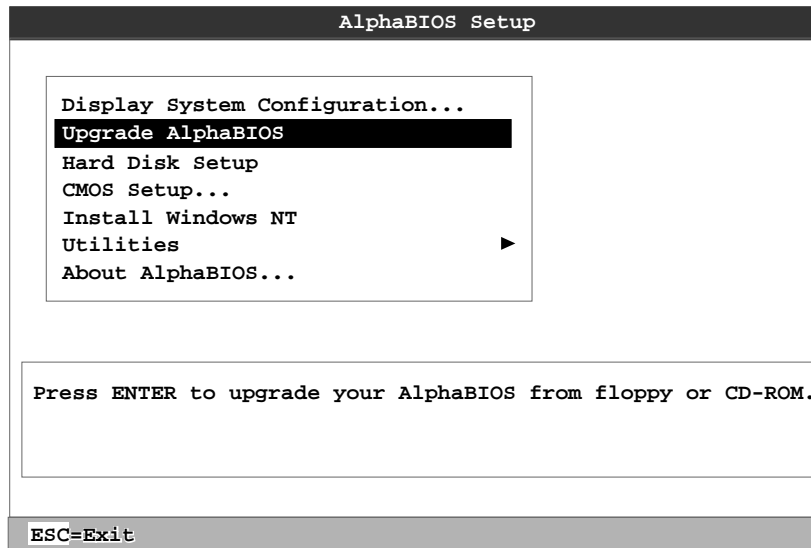
LJ-05706.AI4

A typical update procedure is:

1. Start LFU.

2. Use the LFU **list** command to show the revisions of modules that LFU can update and the revisions of update firmware.

3. Use the LFU **update** command to write the new firmware.

4. Use the LFU **exit** command to exit back to the console.

The sections that follow show examples of updating firmware from the local CD-ROM, the local floppy, and a network device. Following the examples is an LFU command reference.

2.6.1 Updating Firmware from the Internal CD-ROM

Insert the update CD-ROM, start LFU, and select cda0 as the load device.

Example 2-3 Updating Firmware from the Internal CD-ROM

```
***** Loadable Firmware Update Utility *****


Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: cda0        ❶


Please enter the name of the options firmware files list, or
Press <return> to use the default filename [AS4X00FW]: AS4X00FW ❷


Copying AS4X00CP from DKA500.5.0.1.1 .
Copying [as4x00]RHREADME from DKA500.5.0.1.1 .
Copying [as4x00]RHSRMROM from DKA500.5.0.1.1 ....................
Copying [as4x00]RHARCROM from DKA500.5.0.1.1 .............


-----------------------------------------------------------------

 Function    Description                                         ❸
-----------------------------------------------------------------

 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, firmware name, and
             update revision.
 Lfu         Restarts LFU.
 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.
-----------------------------------------------------------------


UPD> list                                                        ❹


Device          Current Revision    Filename        Update Revision
AlphaBIOS       V5.12-2             arcrom           V6.40-1
srmflash        V1.0-9             srmrom           V2.0-3


UPD> update *                                                    ❺
WARNING: updates may take several minutes to complete for each device.
```

```
Confirm update on: AlphaBIOS        [Y/(N)] y                              ❻


                           DO NOT ABORT!
AlphaBIOS       Updating to V6.40-1... Verifying V6.40-1... PASSED.


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


                           DO NOT ABORT!
srmflash         Updating to V2.0-3...  Verifying V2.0-3...  PASSED.


UPD> exit                                                                 ❼
```

❶   Select the device from which firmware will be loaded. The choices are the internal CD-ROM, the internal floppy disk, or a network device. In this example, the internal CD-ROM is selected.

❷   Select the file that has the firmware update, or press Enter to select the default file. The file options are:

AS4X00FW (default)	SRM console, AlphaBIOS console, and I/O adapter firmware.
AS4X00CP	SRM console and AlphaBIOS console firmware only.
AS4X00IO	I/O adapter firmware only.

In this example the file for console firmware (AlphaBIOS and SRM) is selected.

❸   The LFU function table and prompt (UPD>) display.

❹   Use the LFU **list** command to determine the revision of firmware in a device and the most recent revision of that firmware available in the selected file. In this example, the resident firmware for each console (SRM and AlphaBIOS) is at an earlier revision than the firmware in the update file.

❺   The **update** command updates the device specified or all devices. In this example, the wildcard indicates that all devices supported by the selected update file will be updated.

❻   For each device, you are asked to confirm that you want to update the firmware. The default is no. Once the update begins, do not abort the operation. Doing so will corrupt the firmware on the module.

❼   The **exit** command returns you to the console from which you entered LFU (either SRM or AlphaBIOS).

2.6.2 Updating Firmware from the Internal Floppy Disk (Creating the Diskettes)

To update system firmware from the floppy disk, you first must create the firmware update diskettes. You will need to create two diskettes: one for console updates, and one for I/O.

1. Download the update files from the Internet.

    You can access the firmware as follows:

    *   Using a World Wide Web browser (such as Mosaic or Netscape), follow links to AlphaServer 4100 systems, then technical resources from URL:

        http://www.digital.com/info/alphaserver/products.html

    *   Using ftp, copy the file:

        ftp://ftp.digital.com/pub/Digital/Alpha/firmware/

    The files are structured as those on the firmware CD and are separated by CD release. For example, the contents of the V3.6 firmware CD are located at:

    ftp://ftp.digital.com/pub/Digital/Alpha/firmware/v3.6

2. On a PC, copy files onto two FAT-formatted diskettes as shown in Table 2-2.

    From an OpenVMS system, copy files onto two ODS2-formatted diskettes as shown in Example 2-4.

Table 2-2 File Locations for Creating Update Diskettes on a PC

Console Update Diskette	I/O Update Diskette
AS4X00FW.TXT	AS4X00IO.TXT
AS4X00CP.TXT	RHREADME.SYS
RHREADME.SYS	CIPCA214.SYS
RHSRMROM.SYS	DFPAA246.SYS
RHARCROM.SYS	KZPAAA10.SYS

Example 2-4 Creating Update Diskettes on an OpenVMS System

Console update diskette

```
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init /density=hd/index=begin dva0: rhods2cp
$ mount dva0: rhods2cp
$ create /directory dva0:[as4x00]
$ copy as4x00fw.sys dva0:[as4x00]as4x00fw.sys
$ copy as4x00cp.sys dva0:[as4x00]as4x00cp.sys
$ copy rhreadme.sys dva0:[as4x00]rhreadme.sys
$ copy as4x00fw.txt dva0:[as4x00]as4x00fw.txt
$ copy as4x00cp.txt dva0:[as4x00]as4x00cp.txt
$ copy rhsrmrom.sys dva0:[as4x00]rhsrmrom.sys
$ copy rharcrom.sys dva0:[as4x00]rharcrom.sys
$ dismount dva0:
$ set noverify
$ exit
```

I/O update diskette

```
$ inquire ignore "Insert blank HD floppy in DVA0, then continue"
$ set verify
$ set proc/priv=all
$ init /density=hd/index=begin dva0: rhods2io
$ mount dva0: rhods2io
$ create /directory dva0:[as4x00]
$ create /directory dva0:[options]
$ copy as4x00fw.sys dva0:[as4x00]as4x00fw.sys
$ copy as4x00io.sys dva0:[as4x00]as4x00io.sys
$ copy rhreadme.sys dva0:[as4x00]rhreadme.sys
$ copy as4x00fw.txt dva0:[as4x00]as4x00fw.txt
$ copy as4x00io.txt dva0:[as4x00]as4x00io.txt
$ copy cipca214.sys dva0:[options]cipca214.sys
$ copy dfpaa246.sys dva0:[options]dfpaa246.sys
$ copy kzpsaA10.sys dva0:[options]kzpsaa10.sys
$ dismount dva0:
$ set noverify
$ exit
```

2.6.3 Updating Firmware from the Internal Floppy Disk (Performing the Update)

Insert an update diskette (see Section 2.6.2) into the internal floppy drive. Start LFU and select dva0 as the load device.

Example 2-5 Updating Firmware from the Internal Floppy Disk

```
***** Loadable Firmware Update Utility *****


Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0          ❶


Please enter the name of the options firmware files list, or
Press <return> to use the default filename [AS4X00IO,(AS4X00CP)]:
AS4X00IO                                                          ❷


Copying AS4X00IO from DVA0 .
Copying RHREADME from DVA0 .
Copying CIPCA214 from DVA0 .
Copying DFPAA252 from DVA0 ...
Copying KZPSAA11 from DVA0 ...
.
. [The function table displays, followed by the UPD> prompt, as
. shown in Example 2-3


UPD> list                                                        ❸


Device          Current Revision    Filename      Update Revision
AlphaBIOS          V5.12-3           arcrom        Missing file
pfi0                2.46             dfpaa_fw          2.52
srmflash           T3.2-21           srmrom        Missing file
                                     cipca_fw         A214
                                     kzpsa_fw          A11


UPD> update pfi0                                                  ❹
WARNING: updates may take several minutes to complete for each device.


Confirm update on: pfi0             [Y/(N)] y                     ❺


                      DO NOT ABORT!
pfi0            Updating to 2.52... Verifying to 2.52... PASSED.
```

```
UPD> lfu                                                              ❻


          ***** Loadable Firmware Update Utility *****


Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0


Please enter the name of the options firmware files list, or
Press <return> to use the default filename [AS4X00IO,(AS4X00CP)]:❼


.
. (The function table displays, followed by the UPD> prompt.
.  Console firmware can now be updated.)


UPD> exit                                                            ❽
```

❶   Select the device from which firmware will be loaded. The choices are the internal CD-ROM, the internal floppy disk, or a network device. In this example, the internal floppy disk is selected.

❷   Select the file that has the firmware update, or press Enter to select the default file. When the internal floppy disk is the load device, the file options are:

AS4X00CP (default)   SRM console and AlphaBIOS console firmware only.

AS4X00IO   I/O adapter firmware only.

The default option in Example 2-3 (AS4X00FW) is not available, since the file is too large to fit on a 1.44 MB diskette. This means that when a floppy disk is the load device, you can update either console firmware or I/O adapter firmware, but not both in the same LFU session. If you need to update both, after finishing the first update, restart LFU with the **lfu** command and insert the diskette with the other file.

In this example the file for I/O adapter firmware is selected.

❸   Use the LFU **list** command to determine the revision of firmware in a device and the most recent revision of that firmware available in the selected file. In this example, the update revision for console firmware displays as "Missing file" because only the I/O firmware files are available on the floppy disk.

❹   The **update** command updates the device specified or all devices.

❺   For each device, you are asked to confirm that you want to update the firmware. The default is no. Once the update begins, do not abort the operation. Doing so will corrupt the firmware on the module.

❻   The **lfu** command restarts the utility so that console firmware can be updated. (Another method is shown in Example 2-6, where the user specifies the file AS4X00FW and is prompted to insert the second diskette.)

❼   The default update file, AS4X00CP, is selected. The console firmware can now be updated, using the same procedure as for the I/O firmware.

❽   The **exit** command returns you to the console from which you entered LFU (either SRM or AlphaBIOS).

Example 2-6 Selecting AS4X00FW to Update Firmware from the Internal Floppy Disk

```
P00>>> lfu


        ***** Loadable Firmware Update Utility *****


Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: dva0


Please enter the name of the firmware files list, or
Press <return> to use the default filename [AS4X00IO,(AS4X00CP)]: AS4X00FW


Copying AS4X00FW from DVA0 .
Copying RHREADME from DVA0 .
Copying RHSRMROM from DVA0 .........................
Copying RHARCROM from DVA0 ...............
Copying CIPCA214 from DVA0
Please insert next floppy containing the firmware,
Press <return> when ready. Or type DONE to abort.
Copying CIPCA214 from DVA0 .
Copying DFPAA246 from DVA0 ...
Copying KZPSAA10 from DVA0 ...
.
.
.
```

2.6.4 Updating Firmware from a Network Device

Copy files to the local MOP server's MOP load area, start LFU, and select ewa0 as the load device. Before starting LFU, download the update files from the Internet (see Section 2.6.2). You will need the files with the extension .SYS. Copy these files to your local MOP server's MOP load area.

Example 2-7 Updating Firmware from a Network Device

```
***** Loadable Firmware Update Utility *****


Select firmware load device (cda0, dva0, ewa0), or
Press <return> to bypass loading and proceed to LFU: ewa0        ❶


Please enter the name of the options firmware files list, or
Press <return> to use the default filename [AS4X00FW]:           ❷


Copying AS4X00FW from EWA0 .
Copying RHREADME from EWA0 .
Copying RHSRMROM from EWA0 ..........................
Copying RHARCROM from EWA0 ............
Copying CIPCA214 from EWA0 .
Copying DFPAA246 from EWA0 ...
Copying KZPSAA11 from EWA0 ...
.
.  [The function table displays, followed by the UPD> prompt, as
.  shown in Example 2-3.]


UPD> list                                                        ❸


Device          Current Revision   Filename      Update Revision
AlphaBIOS          V5.12-2          arcrom          V6.40-1
kzpsa0             A10              kzpsa_fw        A10
kzpsa1             A10              kzpsa_fw        A10
srmflash           V1.0-9           srmrom          V2.0-3
                                    cipca_fw        A214
                                    dfpaa_fw         2.46


UPD> update * -all                                               ❹
WARNING: updates may take several minutes to complete for each device.
                    DO NOT ABORT!
```

```
AlphaBIOS    Updating to V6.40-1... Verifying V6.40-1...  PASSED.


                        DO NOT ABORT!
kzpsa0       Updating to  A11    ... Verifying A11...  PASSED.


                        DO NOT ABORT!
kzpsa1       Updating to  A11    ... Verifying A11...  PASSED.


                        DO NOT ABORT!
srmflash     Updating to V2.0-3...  Verifying V2.0-3...  PASSED.


UPD> exit                                                       ❺
```

❶   Select the device from which firmware will be loaded. The choices are the internal
      CD-ROM, the internal floppy disk, or a network device. In this example, a network
      device is selected.

❷   Select the file that has the firmware update, or press Enter to select the default file.
      The file options are:

      AS4X00FW   SRM console, AlphaBIOS console, and I/O adapter
      (default)   firmware.

      AS4X00CP   SRM console and AlphaBIOS console firmware only.

      AS4X00IO   I/O adapter firmware only.

      In this example the default file, which has both console firmware (AlphaBIOS and
      SRM) and I/O adapter firmware, is selected.

❸   Use the LFU **list** command to determine the revision of firmware in a device and the
      most recent revision of that firmware available in the selected file. In this example,
      the resident firmware for each console (SRM and AlphaBIOS) and I/O adapter is at
      an earlier revision than the firmware in the update file.

❹   The **update** command updates the device specified or all devices. In this example,
      the wildcard indicates that all devices supported by the selected update file will be
      updated. Typically LFU requests confirmation before updating each console's or
      device's firmware. The **-all** option eliminates the update confirmation requests.

❺   The **exit** command returns you to the console from which you entered LFU (either
      SRM or AlphaBIOS).

2.6.5 LFU Commands

The commands summarized in Table 2-3 are used to update system firmware.

Table 2-3 LFU Command Summary

Command	Function
display	Shows the physical configuration of the system.
exit	Terminates the LFU program.
help	Displays the LFU command list.
lfu	Restarts the LFU program.
list	Displays the inventory of update firmware on the selected device.
readme	Lists release notes for the LFU program.
update	Writes new firmware to the module.
verify	Reads the firmware from the module into memory and compares it with the update firmware.

These commands are described in the following pages.

display

The **display** command shows the physical configuration of the system. **Display** is equivalent to issuing the SRM console command **show configuration**. Because it shows the slot for each module, **display** can help you identify the location of a device.

exit

The **exit** command terminates the LFU program, causes system initialization and testing, and returns the system to the console from which LFU was called.

help

The **help** (or **?**) command displays the LFU command list, shown below.

```
-----------------------------------------------------------------

 Function    Description

-----------------------------------------------------------------

 Display     Displays the system's configuration table.

 Exit        Done exit LFU (reset).

 List        Lists the device, revision, firmware name, and update
             revision.

 Lfu         Restarts LFU.

 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.

-----------------------------------------------------------------
```

lfu

The **lfu** command restarts the LFU program. This command is used when the update files are on a floppy disk. The files for updating both console firmware and I/O firmware are too large to fit on a 1.44 MB disk, so only one type of firmware can be updated at a time. Restarting LFU enables you to specify another update file.

list

The **list** command displays the inventory of update firmware on the CD-ROM, network, or floppy. Only the devices listed at your terminal are supported for firmware updates.

The **list** command shows three pieces of information for each device:

- Current Revision — The revision of the device's current firmware
- Filename — The name of the file used to update that firmware
- Update Revision — The revision of the firmware update image

readme

The **readme** command lists release notes for the LFU program.

update

The **update** command writes new firmware to the module. Then LFU automatically verifies the update by reading the new firmware image from the module into memory and comparing it with the source image.

To update more than one device, you may use a wildcard but not a list. For example, **update k*** updates all devices with names beginning with k, and **update *** updates all devices. When you do not specify a device name, LFU tries to update all devices; it lists the selected devices to update and prompts before devices are updated. (The default is no.) The **-all** option eliminates the update confirmation requests, enabling the update to proceed without operator intervention.

_____ **Caution** _____

Never abort an **update** operation. Aborting corrupts the firmware on the module.
_____

verify

The **verify** command reads the firmware from the module into memory and compares it with the update firmware. If a module already verified successfully when you updated it, but later failed tests, you can use **verify** to tell whether the firmware has become corrupted.

2.7 Updating EISA Configuration Data

This section 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.

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

_____Caution_____

There are two versions 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.

_____

2.7.1 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.
```

2.7.2 Step 2: Correct Your Configuration Data

Using the cursor control keys:

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

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

3. 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.

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

2.7.3 Step 3: Step Through the ECU Dialog Boxes

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

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

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

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

4. Press <Enter> to save the configuration.

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

_____ **Note**_____

For information on configuring ISA devices, refer to the *DIGITAL Custom AlphaServer 4100 System Solutions Installation/Owner's/Service Guide.*

_____

2.8 Restoring Custom Configurations

Use the custom configuration information you recorded prior to the hardware upgrade (see Section 2.2) to restore any customizations to be stored in NVRAM. Refer to the *DIGITAL Custom AlphaServer 4100 System Solutions Installation/Owner's/Service Guide* for information on setting specific environment variables.