AlphaServer 2x00 /2100A

CPU Upgrade

Part Number: EK-KN470-IN. B01

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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 explains how to upgrade AlphaServer 2x00/2100A computers with performance-enhanced CPU modules. The computers include the following:

AlphaServer 2000
AlphaServer 2100
AlphaServer 2100 RM or CAB
AlphaServer 2100A

Audience

This document is for system managers and others who are responsible for managing and upgrading AlphaServer 2x00/2100A computers.

How to Use This Document

Identify the case that applies to your system.

Case 1: Upgrades. Replacing existing CPU modules with performance-enhanced CPU modules (upgrading). For example, you can swap all your KN45x or KN460 CPU modules with KN470 or later revision modules. For this case, start with Chapter 1 and carefully follow the instructions in each subsequent chapter.

Case 2: Add-On's for Digital UNIX or Windows NT. If you are adding KN470 or later revision CPU modules in a Digital UNIX or Windows NT system that already contains identical CPU modules, go directly to Chapter 4.

Case 3: KN470 Add-On's for OpenVMS. If you are adding KN470 or later revision CPU modules in an OpenVMS system that already contains identical CPU modules, start with Chapter 3, which describes how to update the console firmware. Use the AlphaServer 2x00/2100A Firmware Update CD-ROM that came with your new CPU module.

Caution

You cannot mix CPU types within the same system. For example, you cannot install KN480 modules in a system populated with KN470 modules.

KN470 and KN480 Module Technical Specifications

CPU Module Specifications

Option	Module	Micro-Processor	Frequency	Cycle Time	L3 Cache Size	L3 Cache Access Time	No. of CPUs Supported 2100A/2100/2000
KN470-AA, -AB	B2040-AA, -AB	21164	250 MHz	4.0 ns	4 MB	20 ns	4/4/2
KN480-AA	B2040-BA	21164	291 MHz	3.4 ns	4 MB	20 ns	4/4/2

Microprocessor Specifications

Processor	I-Cache	D-Cache	S-Cache	Miscellaneous
21164	8K	8K	96K (3-way set associative)	Quad issue

Maximum DC Power Requirements

CPU Option	3.3V +5%/-3% A	5.0V +/-5% A
B2040-AA, -AB	14.5	12.0
B2040-BA	16.5	12.0

Environmental Requirements

Parameter	Range
Storage temperature	-40°C to 66°C
Storage humidity	10% to 95%
Operating temperature	5°C to 35°C with 10°C rise inlet to outlet
Operating humidity	10% to 95% noncondensing at 304 m of altitude

For More Information

The following table lists documents related to the operation of the AlphaServer 2x00/2100A systems and documents that contain information on upgrading the operating systems supported by the hardware.

Document Title	**Part Number**
AlphaServer 2000/2100/2100 RM/2100 CAB Series Service Guide	EK-KN450-SV
AlphaServer 2100A/2100A RM/2100A CAB Series Service Guide	EK-2100A-SV
AlphaServer 2000 Owner's Guide	EK-400MP-IN
AlphaServer 2100 Owner's Guide	EK-KN450-OP
AlphaServer 2100A Owner's Guide	EK-2100A-OP
H9A10 (600 mm) Cabinet Installation and Owner's Guide	EK-H9A10-IN
AlphaServer 2100 RM Installation/Owner's Guide	EK-KN450-RM
AlphaServer 2000/2100/2100A Firmware Reference Guide	EK-AXPFW-RM
Digital UNIX Release Notes and Installation Instructions	AA-PXC6F-TE (for V3.2C) AA-PXC6G-TE (for V3.2D)
Digital UNIX Release Notes	AA-PS2BF-TE
Digital UNIX Installation Guide	AA-PS2DF-TE
OpenVMS AXP Version 6.2 Upgrade and Installation Manual	AA-PV6XC-TE
StorageWorks RAID Array 200 Subsystems Controller Installation and Standalone Configuration Utility User's Guide	EK-SWRA2-IG
AlphaServer World Wide Web Site	http://www.service.digital.com/alpha/server/

1
Upgrade Overview

This chapter assumes that you are upgrading an AlphaServer 2x00/2100A system from 4/2xx to 5/xxx. If you already have an AlphaServer 2x00/2100A 5/xxx system, and you want to install additional KN470 or later revision CPUs, go directly to Chapter 3 (for OpenVMS systems) or Chapter 4 (for Digital UNIX and Windows NT systems).

Upgrade Kit Contents

The following items are required to perform an upgrade. They are provided in the upgrade kit.

Software	QZ-00SAA-EW
AlphaServer 2x00/2100A Firmware Update CD-ROM. Includes: • Loadable firmware utility for upgrading to KN470 or higher CPUs. • Loadable firmware utility for updating FSL or restoring system to its previous operating condition.	AG-QRUSA-BE
RAID Standalone Configuration Utility V3.11 for updating RAID controller firmware after CPU upgrade.	
EISA Configuration Utility (ECU) kit V1.8 for rebuilding EISA configuration data after the CPU upgrade. Includes:	
• Digital UNIX and OpenVMS ECU diskette	AK-Q2CR*-CA
• Windows NT ECU diskette	AK-PYCJ*-CA
CPU modules	KN470 or KN480
System label for labeling upgraded system	

Restrictions

AlphaServer 2000 4/200 Systems

If you took delivery of an AlphaServer 2000 4/200 system before April 17, 1995 (serial numbers *nn*515*nnnnn* or lower) and are installing KN470 or later revision CPUs, you need to order a free AlphaServer 2000 Enclosure EMC Upgrade Kit (BA720-UA). The enclosure upgrade kit ensures compliance with regulatory EMI/RFI emissions standards. The kit contains a new cover assembly and system bus cover, which can be installed after you complete the CPU installation.

Call 1-800-DIGITAL to order the BA720-UA kit. You can install the kit yourself or call the nearest Digital Multivendor Services office to arrange for free installation.

StorageWorks RAID Array Subsystem Firmware

If your system is configured with a StorageWorks RAID controller with a firmware version below V3.11, you should update the controller firmware after you install new CPUs. The V3.11 standalone configuration utility is provided on the Firmware Update CD-ROM in this upgrade kit and includes V2.16 firmware for EISA controllers and V2.19 for PCI controllers. Refer to Chapter 5 for instructions.

Upgrade Process

The upgrade process is briefly outlined below. Follow the steps in sequence, as described in the remaining chapters.

1. Update the operating system to the revision level required by the hardware.
2. Shut down the operating system and halt the AlphaServer system.
3. Boot the loadable firmware utility from the CD-ROM and update the SRM and ARC firmware images.

Important!

The 2x00/2100A 4/2xx console firmware does not work with 2x00/2100A 5/xxx console firmware and vice versa. Once the firmware update is complete, you must upgrade the CPU modules.

4. Exit the loadable firmware utility and power down the system.
5. Remove the KN45x or KN460 CPU modules, and install KN470 or later revision CPU modules. Then power up the system.
6. Update the fail-safe loader (optional).

Note

If you plan to downgrade from a KN470 or later revision module to KN45x or KN460 modules, do not update the fail-safe loader (FSL). The updated FSL will not run on the KN45x or KN460 modules. For information on downgrading your system, see Chapter 7.

7. Run the EISA Configuration Utility to correct the EISA configuration.
8. Run the StorageWorks RAID standalone configuration utility if your system has a StorageWorks RAID controller with a firmware version below V3.11.
9. Reset and reboot the system, and boot the operating system.
10. Complete the operating system update, if necessary.

2

Updating the Operating System

Minimum Operating System Revisions

Before you begin the CPU upgrade, make sure your operating system is at the revision level required by the hardware. Be sure to make a record of configuration parameters, such as environment variables for Windows NT or Digital UNIX disk partition.

Operating System	Minimum Required Revision Level for 2x00	Minimum Required Revision Level for 2100A
Digital UNIX	V3.2C	V3.2D-2
OpenVMS	V6.2	V6.2-1
Microsoft Windows NT	V3.51	V3.51 plus Hardware Support Disk

- If your operating system revision level is lower than indicated in the table, refer to your operating system documentation for instructions on updating the operating system. Relevant documents are listed in the Preface.
- If your Digital UNIX or OpenVMS operating system is at the correct revision level, perform an operating system shutdown and go to Chapter 3.
- If your Windows NT operating system is at the correct revision level, complete the following procedure before shutting down the operating system. The procedure installs new system files required for the CPU upgrade.

Installing New Windows NT System Files

Step 1: Boot the Windows NT operating system.

Step 2: Copy the new system files to the system directory.

A. Insert the Windows NT V3.51 installation CD-ROM into the CD-ROM drive (`x:` in the following example). At the DOS prompt, copy the system files from the CD-ROM to the system directory.

```
c:\> cd os\winnt
c:\os\winnt> xcopy /rk x:\alpha\halgammp.dll hal.dll
c:\os\winnt> attrib +s +h +r hal.dll
```

B. Shut down the Windows NT operating system.

Step 3: Prepare to update the firmware.

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

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

C. Record any ARC configuration settings, because you will clear the ARC NVRAM before updating the firmware (see Chapter 3).

D. From the Setup menu, select `Switch to OpenVMS or Digital UNIX console.`

E. Turn the system off, then on again. The `P00>>>` prompt for the SRM firmware is displayed.

You are ready to update the firmware. Go to Chapter 3.

3

Updating the ARC and SRM Console Firmware

This chapter explains how to update the ARC and SRM console firmware.

Procedure

Step 1: Halt the system, disable autoboot, and check os_type.

A. After you have shut down the operating system, halt the system by pressing the Halt button to the “in” position on the operator control panel. The SRM console prompt `P00>>>` is displayed on the console terminal screen.

B. Disable autoboot if the system is so configured by modifying the auto_action environment variable.

```
P00>>> show auto_action
auto_action          boot
P00>>> set auto_action halt
P00>>>
```

C. Check the setting of the os_type environment variable.

```
P00>>> show os_type
os_type              nt
```

If os_type is set to NT, set it to either OpenVMS or Digital UNIX, and initialize the system, as shown in the following example:

```
P00>>> set os_type openvms
P00>>> init
.
.
.
```

Step 2: Clear the ARC NVRAM data.

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

Note

Clearing the ARC NVRAM data clears the EISA configuration data. After installing the KN470 or later CPU modules, you must re-run the EISA Configuration Utility as described in Chapter 5.

Step 3: Update the firmware.

Caution for OpenVMS Add-On CPUs

If you are *adding* a KN470 CPU to an OpenVMS system that already contains identical modules, use the firmware update CD-ROM that was shipped with your add-on CPU.

A. Press the Halt button to the “out” position to halt the system.

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

```
P00>>> boot -flags 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 for AlphaServer 2x00	[ALPHA2100]V43_SBUPGRADE.EXE
Bootfile for AlphaServer 2100A	[ALPHA2100]V43_SLUPGRADE.EXE

For example, enter the following for an AlphaServer 2000, 2100, or 2100 RM system:

```
Bootfile:  [alpha2100]v43_sbupgrade.exe
```

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, list the devices and revisions. For example:

UPD> **list**

```
Device Current Revision   Filename     Update Revision

arcflash     4.42-1       arcrom          4.43-1

srmflash     4.2-74       srmrom          4.3-nnn

                          cipca_fw     XX0D

                          dfeaa_fw        1.3

                          dfeab_fw        2.46

                          dfpaa_fw        2.46

                          kzpsa_fw      A09
```

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.

                    DO NOT ABORT!

arcflash     Updating to 4.43-1...  Verifying 4.43-1...  PASSED.

srmflash     Updating to 4.3-nnn ...Verifying 4.3-nnn... PASSED.


UPD> exit

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

Please reset the system......
```

F. Press the DC On/Off button to turn the system off. Go to Chapter 4 to continue the upgrade procedure.

Caution

The SRM and ARC firmware you just updated are executable only on a KN470 or later revision module. The fail-safe loader (FSL) that is currently in your system is executable on KN45x or KN460 modules.

The next part of the upgrade procedure is to install the new CPU modules. Before installing modules, be sure to shut down the system with the DC On/Off button, not the Reset button.

4
CPU Module Installation

Before You Begin

- If you are upgrading from an AlphaServer 2x00/2100A 4/2xx system to an AlphaServer 2x00/2100A 5/xxx, be sure you have completed all the steps in Chapters 1–3.
- If you are installing additional KN470 or later revision CPU modules into an AlphaServer 2x00/2100A 5/xxx system running Digital UNIX or Windows NT, begin at Step 1 in this chapter.
- If you are installing additional KN470 or later revision CPU modules into an AlphaServer 2x00/2100A 5/xxx system running OpenVMS, be sure you have completed the firmware update steps in Chapter 3, using the Firmware Update CD-ROM included in the upgrade kit.

Caution

You cannot mix CPU types within the same system. For example, a KN480 CPU module cannot be used in the same system with KN470 modules.

On AlphaServer 2x00 systems, an additional power supply is required if your system is fully configured and contains a second storage assembly or more than two CPUs. The J3 jumper on the I/O module must be removed when the additional power supply is required. In lesser configurations, the J3 jumper is installed for N+1 redundancy. Refer to Chapter 6.

Procedure

Step 1: Perform a power shutdown.

A. Perform an orderly shutdown of the operating system..

B. Set the DC On/Off button on the operator control panel to “off.” If necessary, refer to your 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 “off” (if applicable to your system).

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

E. Remove system door and cover or panels, as illustrated on the following pages.

Warning

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

Figure 4-1: Removing AlphaServer 2100 or 2100A Side Panel

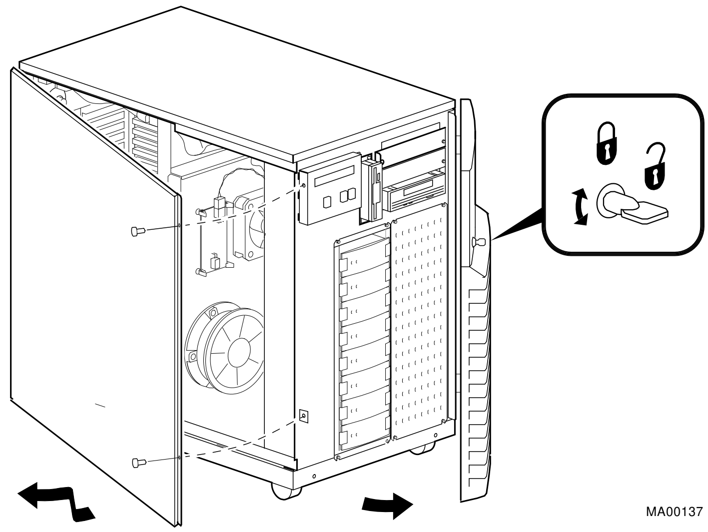


Figure 4-2: Removing AlphaServer 2000 Cover

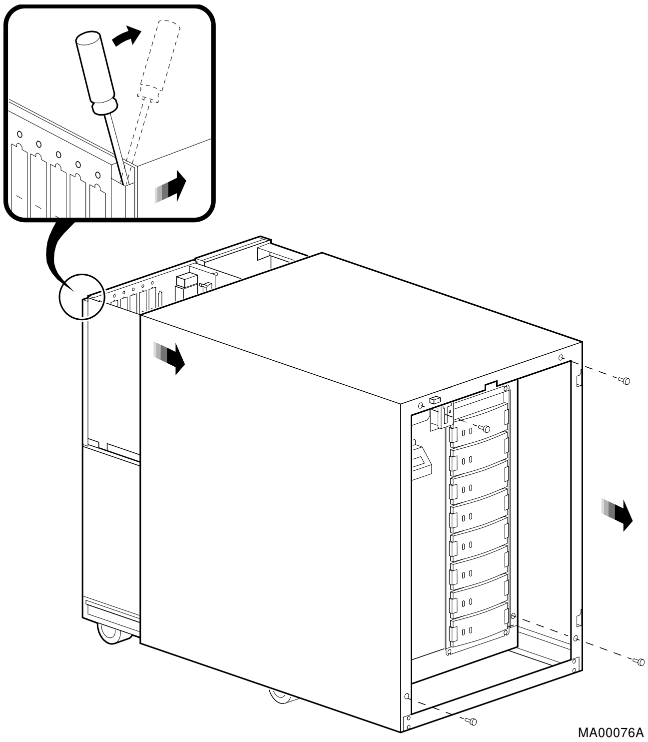
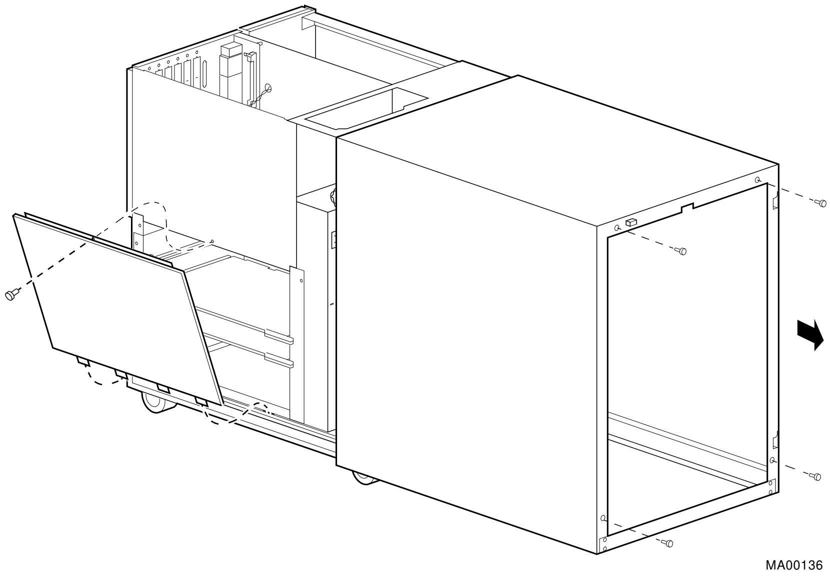


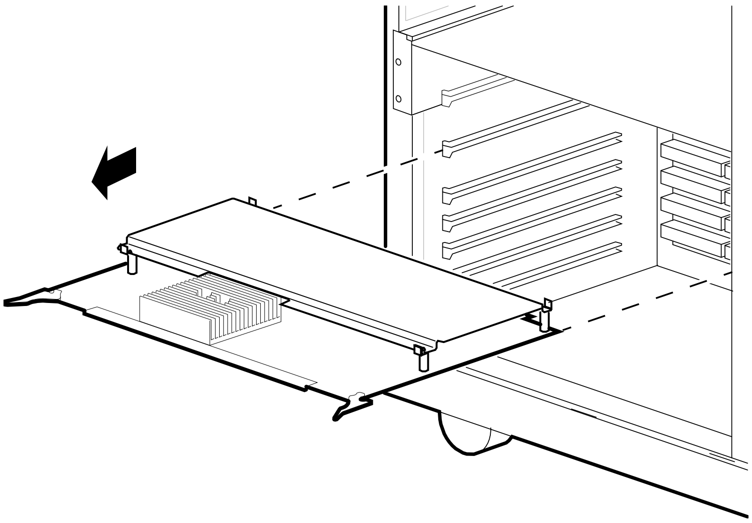
Figure 4-3: Removing AlphaServer 2000 Side Panel



Step 2: Remove all KN45x or KN460 CPU modules.

This step is necessary only for an upgrade. If you are installing additional KN470 or later revision modules, skip this step.

Figure 4-4: Removing KN45x or KN460 CPU Module



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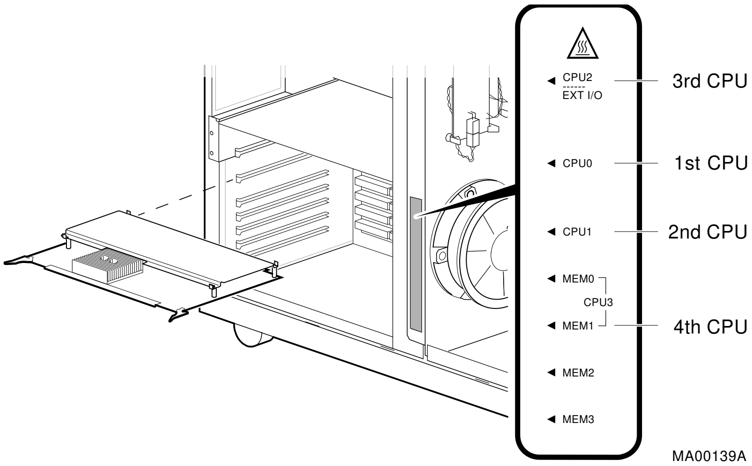
Step 3: Determine the new CPU configuration.

Refer to the illustration for your system to determine the new CPU configuration.

Figure 4-5: AlphaServer 2100 CPU Slots

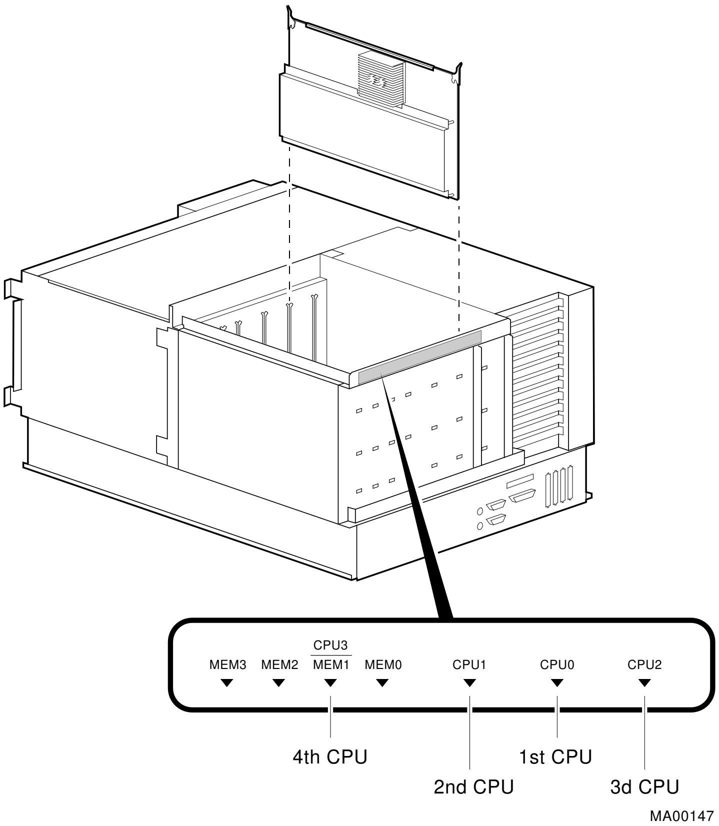


Note

AlphaServer 2100 and 2100A systems have the same CPU locations and configuration rules, but 2100A systems do not have a standard I/O module.

The fourth CPU is installed in slot MEM1 and displaces memory modules from slots MEM0 and MEM1, because CPUs take up two memory slots. See your system Owner's Guide for configuration rules, if necessary.

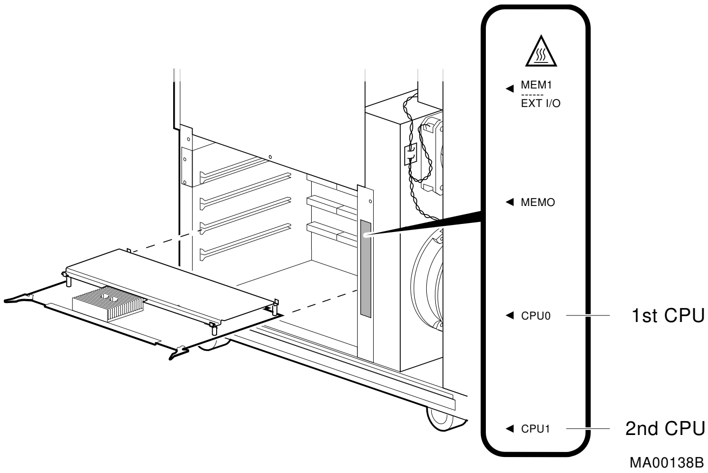
Figure 4-6: AlphaServer 2100 RM and CAB CPU Slots



Note

The fourth CPU is installed in slot MEM1 and displaces memory modules from slots MEM1 and MEM2, because CPUs take up two memory slots. See your system Owner's Guide for configuration rules, if necessary.

Figure 4-7: AlphaServer 2000 CPU Slots



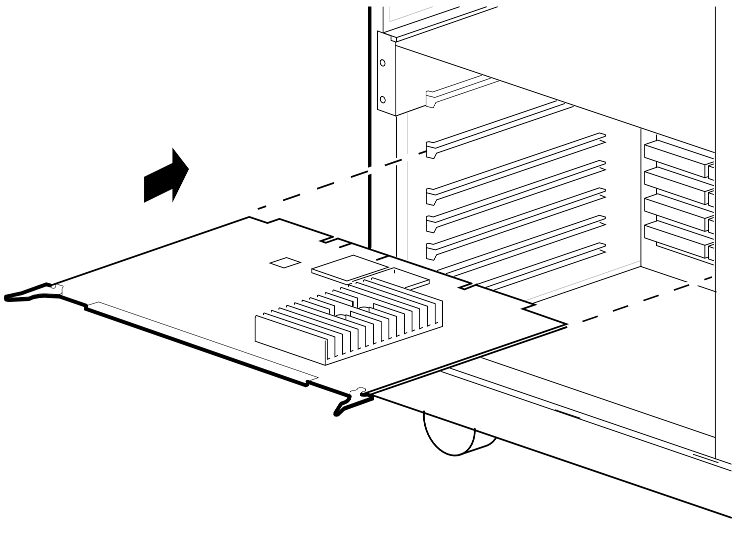
Step 4: Install new CPU modules.

Caution

You cannot mix CPU types within the system: Remove all KN45x or KN460 CPUs before installing KN470 or later revision CPUs.

Modules must be installed in the AlphaServer 2100 RM and 2100 CAB with the components facing toward the right side of the enclosure.

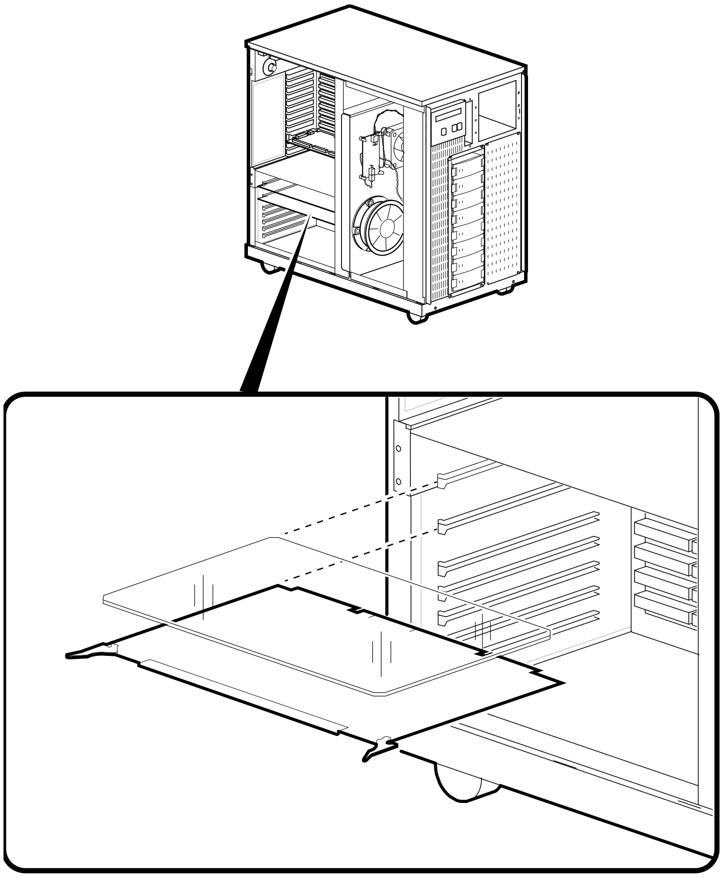
Figure 4-8: Installing a CPU Module (AlphaServer 2100)



Step 5: Install airflow modules in unused slots.

Empty system bus slots adjacent to populated slots must have a plastic filler inserted in them to assure proper airflow over each CPU module. Plastic fillers came with your system. Install a plastic filler as shown.

Figure 4-9: Installing Airflow Modules (AlphaServer 2100)



Step 6: Reinstall panels and doors and reconnect power cords.

Step 7: Power on the system and peripherals.

Observe the startup messages, which scroll down the screen. When the `P00>>>` prompt is displayed, you have successfully completed the CPU installation.

Important!

Use the EISA Configuration Utility diskette, V1.8, provided with the upgrade kit to rebuild your EISA configuration data before you verify the installation. Refer to Chapter 5.

Step 8: Verify the installation.

A. Enter the `show fru` command and verify that all modules installed in the system appear in the Option column of the display. Examine the Events Logged TDD column. If no errors were logged, go to **Step 9**.

Example

In the following example, the test-directed diagnostics (TDD) find no errors, as indicated by 00 in the Events Logged TDD column.

```
P00>>> show fru

 Slot     Option              Rev                  Events Logged
                  Part #      Hw   Sw   Serial #     SDD    TDD
 0        IO      B2110-AA    H2   0    KA347DWV06   00     00
 2        CPU0    B2040-AB    A2   37   ML33900048   00     00
 3        CPU1    B2040-AB    A2   37   KA34509090   00     00
 6        MEM2    B2023-CA    A1   0    ML34100009   00     00
 7        MEM3    B2023-CA    A1   0    ML34100008   00     00
```

B. Clear any errors shown in the Events Logged TDD column (indicated by any number other than 00) by entering the following command:

```
P00>>> clear_error all
```

C. After you have cleared any errors, press the Reset button.

D. Enter the `show fru` command. The TDD column should contain only 00.

Caution

If any errors are still displayed, as indicated by any number other than 00 in the TDD column, do not proceed. A module needs to be replaced. Call your Digital field service representative.

Step 9: Update the fail-safe loader (optional).

This step applies to upgrades only.

The fail-safe loader (FSL) is a utility that allows you to update ARC or SRM console firmware that may have become corrupted under certain circumstances, such as a power failure during a system upgrade. The FSL that is installed on AlphaServer 2x00/2100A 4/2xx systems will not run on KN470 or later revision CPUs. If you have successfully upgraded to KN470 or later, it is recommended that you update the FSL in order to have fail-safe loader functionality on your upgraded system. The procedure is described in Chapter 6.

Step 10: Verify environment variables.

This step applies to upgrades only.

A. Use the `show` and `set` commands at the `P00>>>` prompt to display and reset the values of the following environment variable settings. Refer to the hardware owner's guide and the firmware reference guide for your system for details.

auto_action
ewa0_mode
os_type
boot_def_dev
boot_file
boot os_flags

B. Set the following environment variables as indicated.

Environment Variable	Required Setting
bus_probe_algorithm	If set to `Old`, reset to `New`.
external_mb	Default setting is On. May be set to Off for multiprocessor configurations with KZESC RAID controllers.
PCI_read_mult	Default setting is Off. The Off setting may improve performance of I/O options. For example, EISA options do not benefit from a PCI bus read ahead, which this switch controls.
pci_arb	Do not alter defaults. AlphaServer 2100A default is “Partial-Rotating.” AlphaServer 2x00 default is “Fixed.”

Step 11: Boot the operating system.

Digital UNIX systems: You will need to rebuild the kernel. For instructions, refer to the *Digital UNIX Release Notes and Installation Instructions* for Version 3.2C or 3.2D, as appropriate for your system. After you rebuild the kernel, you can boot the operating system.

OpenVMS and Windows systems. You have completed the upgrade and can boot the operating system.

5
Updating Configuration Data

This chapter explains how to update the configuration information in the EISA Configuration Utility. If your system is configured with a StorageWorks RAID controller below V3.11, it is strongly recommended that you also update the RAID controller firmware, as described in this chapter.

Rebuilding EISA Configuration Data

Use the EISA Configuration Utility diskette, V1.8, provided with the upgrade kit, to rebuild your EISA configuration data. Revisions below V1.8 will not work with KN470 and higher CPU modules. It is recommended that you run the ECU from the graphics monitor.

Caution

There are two 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.

```
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.

If your system is configured with a StorageWorks RAID controller, go to the next section of this chapter. If you do not have a RAID controller, return to Chapter 4, **Step 8** to verify the CPU installation.

Updating the StorageWorks RAID Controller Firmware

If your system is configured with a StorageWorks RAID controller with a firmware version below V3.11, it is strongly recommended that you update the RAID controller firmware.

Use the standalone configuration utility V3.11 supplied on the Firmware Update CD-ROM. This utility contains V2.16 firmware for EISA controllers and V2.19 firmware for PCI controllers. 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 RAID firmware below V3.11 will render your RAID controller inoperable.

Before updating the RAID firmware, do a backup of the existing configuration for each RAID controller.

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.

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.

A. 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, 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.219

Filenames for Multiple Controllers
swxcrfw swxcrfwa.216 swxcrfwa.216 swxcrfwp.219

The system displays a series of messages. The final message asks you to cycle the system power. Press the Reset button.

B. 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.

.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

C. Run the ECU again to load the new CFG file.

Note

If you are not able to copy the .CFG file to your ECU diskette, do the following:
1. Run the ECU and delete the board.
2. Remove the ECU diskette and insert the standalone utility diskette.
3. At the Add Configuration (CFG) file menu, select the appropriate choice and press Enter.
4. At the `Destination Diskette` prompt, remove the standalone utility diskette and insert the ECU diskette, making sure it is write-enabled, then press Enter.
5. At the confirmation prompt, press Enter, and at the highlighted slot, press Enter again. The board will now appear on the display.
6. When you have finished adding boards, press F10 to exit.

6
Updating the Fail-Safe Loader

The fail-safe loader (FSL) is redundant or backup ROM that allows you to update or restore the ARC or SRM console, which may have been corrupted under certain circumstances, such as a power failure during a firmware upgrade. The FSL for the KN45x and KN460 CPU modules does not run on the KN470 or later revision CPU modules. It is recommended, therefore, that you update the fail-safe loader in order to have FSL functionality on your upgraded system.

Caution

If you plan to return to a previous configuration by reinstalling earlier revision CPU modules, do not update the FSL, because the earlier FSL will not run on those CPUs. Refer to Chapter 7 for instructions on downgrading your system.

Update Procedure

Step 1: Enable the fail-safe loader update jumper or switch.

A. Power down the system with the DC On/Off button on the operator control panel.

B. Remove panels as necessary to gain access to the I/O module.

C. Refer to the following table for instructions for specific systems.

System	Enabling FSL Update Switch or Jumper	Switch or Jumper Location
AlphaServer 2100A	Make sure FSL enable switch (top switch) on I/O module is pushed to left (disabled) position. Push FSL console update switch (bottom switch) on I/O module to right (enabled) position.	See Figure 6-1
AlphaServer 2100 and 2100 RM	Install J5 on I/O module and remove J6.	See Figure 6-2
AlphaServer 2000	Install J5 on I/O module and remove J6.	See Figure 6-3

Figure 6-1: FSL on AlphaServer 2100A

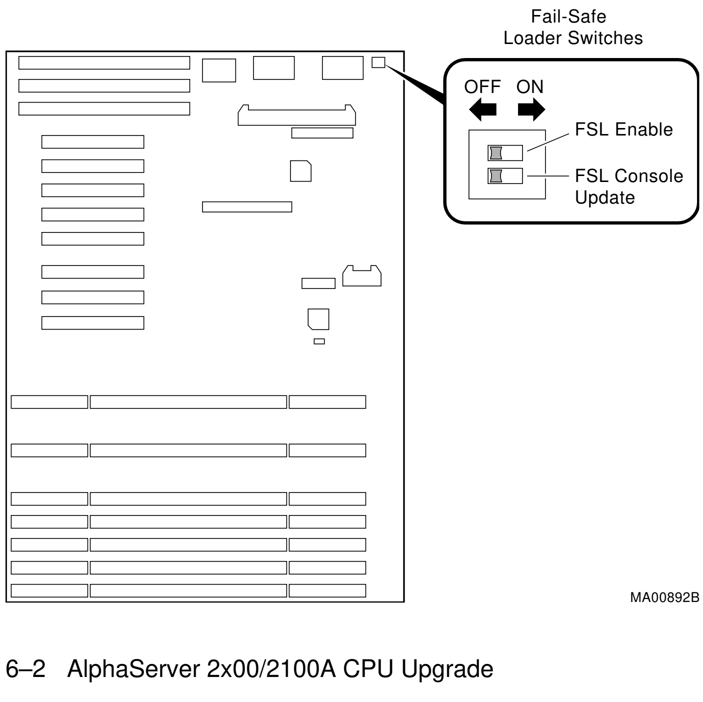
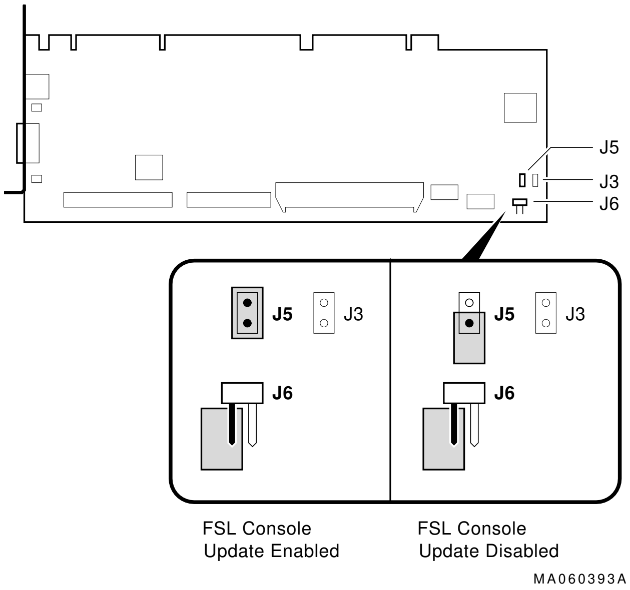


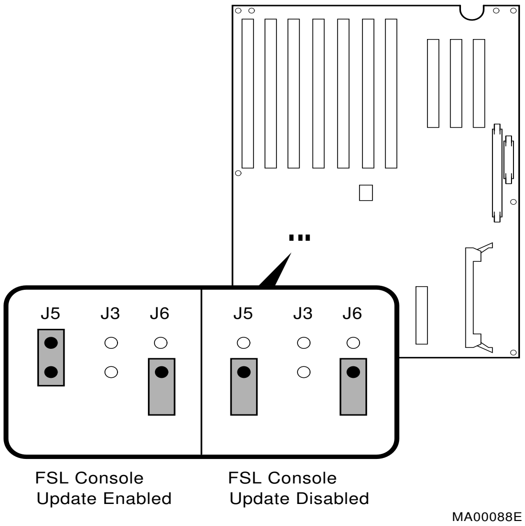
Figure 6-2: FSL on AlphaServer 2100 and 2100RM



Note

AlphaServer 2100 systems that are fully configured and contain a second storage assembly or more than two CPUs require a second power supply. If your system fits this description, remove the J3 jumper as well.

Figure 6-3: FSL on AlphaServer 2000



Note

AlphaServer 2000 systems that are fully configured and contain a second storage assembly require a second power supply. If your system fits this description, remove the J3 jumper as well.

Step 2: Boot the loadable firmware utility.

A. Install 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 -flags 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 for AlphaServer 2x00	[ALPHA2100]AS2100_E5_V4_3.EXE
Bootfile for AlphaServer 2100A	[ALPHA2100]AS2100A_E5_V4_3.EXE

For an AlphaServer 2000, 2100, or 2100 RM system:

`Bootfile:` **`[alpha2100]as2100_e5_V4_3.exe`**

For an AlphaServer 2100A system:

`Bootfile:` **`[alpha2100]as2100a_e5_V4_3.exe`**

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

Step 3: 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 4: Perform a manual update.

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

```
P00>>> update_fsl
(update -path fslrom -target fslfash)

new: 4.3-230
old: 4.3-230
```

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
```

Step 5: Disable the fail-safe loader update jumper or switch.

A. To prevent accidental corruption of the fail-safe loader, disable the fail-safe loader update switch. Refer to the following table.

System	Enabling FSL Update Switch or Jumper	Switch or Jumper Location
AlphaServer 2100A	Make sure FSL enable switch (top switch) on I/O module is pushed to left (disabled) position. Push FSL console update switch (bottom switch) on I/O module to left (disabled) position.	See Figure 6-1
AlphaServer 2100 and 2100 RM	Remove J5 on I/O module. Do *not* install J6.	See Figure 6-2
AlphaServer 2000	Remove J5 on I/O module. Do *not* install J6.	See Figure 6-3

B. Return to Chapter 4, **Step 10**, to complete the update.

7

Downgrading Your System

This chapter explains how to downgrade your system to its operating condition before the CPU upgrade. You might want to do this if you have not been successful in implementing the upgrade or if you wish to return to a previous configuration.

Procedure

Step 1: Shut down your operating system, if necessary.

Step 2: Boot the loadable firmware utility.

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 for AlphaServer 2x00	[ALPHA2100]AS2100_E5_V4_3.EXE
Bootfile for AlphaServer 2100A	[ALPHA2100]AS2100A_E5_V4_3.EXE

For an AlphaServer 2000, 2100, or 2100 RM system:

`Bootfile:` **`[alpha2100]as2100_e5_v4_3.exe`**

For an AlphaServer 2100A system:

`Bootfile:` **`[alpha2100]as2100a_e5_v4_3.exe`**

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

Step 3: Exit the loadable firmware utility.

`UPD>>>` **`exit`**

Answer **`yes`** to the following prompt:

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

Step 4: Downgrade the SRM and ARM ROM images.

A. At the `P00>>>` prompt, enter the `downgrade` command to install the earlier version of the SRM and ARC ROM images.

```
P00>>> downgrade
(update -path slsrmrom -target srmflash)

new: 4.3-nnn
old: 4.3-mmm
```

B. Enter Y at each "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
(update -path sbarcrom -target arcflash)

new: 4.43-1
old: 4.43-1

                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
```

C. Press the DC On/Off button to the “off” position.

Step 5: Remove new modules and install KN45x or KN460 modules.

Replace the KN470 or later revision modules with either KN45x or KN460 modules. Refer to Chapter 4 for slot locations.

Caution

You cannot mix CPU types within the same system. For example, KN45x CPU modules cannot be used in the same system with KN460 modules.

After you have installed the KN45x or KN460 modules, the downgrade is complete.