



AlphaServer 4100/4000

Firmware Release Notes For DIGITAL UNIX and OpenVMS Customers

November 1998

Part number: AA-QX7KN-TE

SRM Console Version: V5.3-1

These release notes are for the V5.3-1 SRM console, and include documented restrictions in V5.3-1. Firmware update instructions and other useful information is also provided.

Firmware release notes for Windows NT AlphaServer 4100/4000 customers are available separately. Information about where to obtain AlphaBIOS console release notes is provided in Section 1.7 of this document.

IMPORTANT NOTE: The AlphaBIOS console has been relocated to a different sector in the flash rom to accommodate Windows NT serviceability. Please read the update procedures information, found in Chapter 2, carefully for the details on this change and what new steps are required for updating firmware. These changes apply to all systems and are independent of what operating system is in use.

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Purpose of These Release Notes

These release notes are intended for users of the AlphaServer 4100 and AlphaServer 4000 cabinet- and pedestal-style systems. Henceforth in these notes, "4100" will be used to refer to both the model 4100 and model 4000. These release notes also support the DIGITAL Server 7000 Models 7300, 7305 and 7310.

This document provides release note information for the following items:

- SRM Console - system FEPR0M0, sectors 3 - 15
- Loadable Firmware Update (LFU) Utility - built into SRM console
- OpenVMS Alpha PALcode - system FEPR0M0, sector 1
- DIGITAL UNIX PALcode - system FEPR0M0, sector 1
- Extended SR0M (XSROM) - system FEPR0M0 sectors 0 and 2
- Fail-safe Loader (FSL) - aforementioned XSROM sectors
- EISA Configuration Utility (ECU) - floppy diskette
- RAID Configuration Utility (RCU) - floppy and Alpha FW CD
- KZPSA Configuration/Diagnostic Utilities - Alpha FW CD
- PCI I/O Adapter Firmware for ISP1020 - shipped in SRM console image
- PCI I/O Adapter Firmware for KZPSA, DEFPA, and CIPCA - Alpha FW CD

AlphaBIOS, which resides in system FEPR0M1 and is used to boot and support Windows NT on the AlphaServer 4100, ships release notes separately. See Section 1.7 for information about where to find AlphaBIOS release notes.

AlphaBIOS is also used to run ECU, RCU, and various other ARC-based utilities which ship on floppy and/or the Alpha Firmware CD. See Chapter 4 of these release notes and the *AlphaServer 4100 System Drawer User's Guide* for instructions on how to use AlphaBIOS and run ARC-based utilities.

System flash parts (FEPR0M0 and FEPR0M1) reside on the PCI motherboard and logically hang off the EISA/XBUS.

See Table 1-1 for current revision information.

How To Order Additional Documentation

If you need help with ordering additional documentation, call 800-DIGITAL (800-344-4825) and press 2 for technical assistance.

Reader Comments

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

Digital Equipment Corporation
Shared Engineering Services
129 Parker St. PKO3-2/E30
Maynard, MA 01754-2199

Conventions Used in This Guide

This document uses the following conventions:

KEY

Indicates a key on your keyboard.

CTRL/key

Indicates control characters. For example, Control C is shown as **CTRL/C** and indicates that both the **CTRL** and the **C** must be pressed simultaneously.

Firmware Update Information

This chapter provides firmware and utility revision information, as well as information on where to find firmware update images and documentation for your AlphaServer 4100 system.

Firmware updates are performed using the SRM console's built-in LFU utility. Bootable LFU images are also supported, e.g. when booting the firmware update CD. LFU supports multiple update devices: local SCSI CD-ROM (CDA0), local floppy (DVA0), and local network (EWA0). Other devices are supported for the advanced user. Refer to Chapter 2 and the *AlphaServer 4100 System Drawer User's Guide* for more information about LFU and other console commands, environment variables to set when performing updates off a network device, and firmware update procedures and examples.

The SRM and AlphaBIOS consoles, and associated firmware files such as I/O option firmware, are available via customer update kits (CD-ROM). Order information for the customer update kit, as well as a pointer to the World Wide Web (WWW) pages, which can be used to obtain interim firmware releases of AlphaServer 4100 firmware, is available later in this chapter.

Firmware Update Information

1.1 Firmware and Operating System Revision Matrix

1.1 Firmware and Operating System Revision Matrix

Table 1–1 lists operating system versions supported by SRM console. The firmware from this release is on the Alpha Systems Firmware Update V5.3 CD.

Table 1–1 AlphaServer 4100 Firmware/Software Revision Matrix

Alpha Systems Firmware Update CD				
Release	V5.3	V5.2	V5.1	V5.0
Date	November-98	June-98	Feb.-98	Oct.-97
AlphaServer 4x00 Firmware				
SRM Firmware	V5.3-1	V5.2-1	V5.1-3	V5.0-2
AlphaBIOS Firmware	V5.67-0	V5.64-1	V5.64-1	V5.32-0
OpenVMS PAL	V1.19-18	V1.19-16	V1.19-14	V1.19-12
DIGITAL UNIX PAL	V1.21-26	V1.21-24	V1.21-22	V1.21-20
Operating Systems				
OpenVMS	V7.1-1H1	V7.1-1H1	V7.1-1H1	V7.1-1H1
	V7.1	V7.1	V7.1	V7.1
	V6.2-1H3	V6.2-1H3	V6.2-1H3	V6.2-1H3
DIGITAL UNIX	V4.0E			
	V4.0D	V4.0D	V4.0D	V4.0D
	V4.0B	V4.0B	V4.0B	V4.0B
	V4.0A	V4.0A	V4.0A	V4.0A
	V3.2G	V3.2G	V3.2G	V3.2G
	V3.2F	V3.2F	V3.2F	V3.2F
Windows NT	V3.51	V3.51	V3.51	V3.51
	V4.0	V4.0	V4.0	V4.0

1.2 Console Firmware Components and Revision Information

The AlphaServer 4100 is shipped with two console images - the SRM console for OpenVMS Alpha and DIGITAL UNIX customers and the AlphaBIOS console for Windows NT customers and for running ARC-based utilities. The SRM console update image (RHSRMROM.SYS) is a compressed file which contains the following individual firmware images:

Firmware Update Information

1.2 Console Firmware Components and Revision Information

Table 1–2 V5.3-1 SRM Console Firmware Components and Revisions

Component	Revision Information
SRM Console	V5.3-1
OpenVMS Alpha PALcode	V1.19-18
DIGITAL UNIX PALcode	V1.21-26
Extended SROM (XSROM)	V5.3
Qlogic ISP1020 Firmware	V5.57.

A World Wide Web (WWW) site is provided for firmware updates. Once the Alpha Systems Firmware Update V5.3 CD-ROM becomes available, update firmware for the AlphaServer 4100 will be available via this update CD. At that time, a /V5.3 directory will be created on the World Wide Web (see Section 1.6 for details).

Serial ROM (SROM) ships in a socketed part on each AlphaServer 4100 CPU. It is responsible for initializing and testing enough of the machine to load Extended SROM (XSROM) from system flash ROM. The latest SROM revision for all AlphaServer 4100 CPU types/revisions is V3.0. Versions V1.1 and V2.0 SROMs can be used on all CPU types/revisions unless you will be bypassing the embedded remote console function and connecting to a high speed modem, in which case, the minimum version needed is V2.0 SROMs for alternate (non-9600) COM1 baud rate support.

XSROM is responsible for loading the SRM console and associated PAL code. If SROM determines that the firmware image it is supposed to load is corrupt (checksum fails), it attempts to load the system Fail-Safe Loader (FSL) from flash ROM. The FSL is a simple floppy loader that can be used to load an SRM console from a floppy diskette. This loaded console can then be used to run the AlphaServer 4100 update utility (LFU). A kit with the FSL diskette and release notes is available. The V5.0 kit contents are listed in Table 1–3.

Table 1–3 Fail-safe Loader Kit content

Part Number	Description
QZ-00WAA-HC.5.0	AlphaServer FSL V5.0 RX23 KIT
AK-R1FYB-CA	AlphaServer FSL V5.0 RX23
AV-R1FZB-TE	AlphaServer Fail Safe REL NTE

Contact your local DIGITAL Services representative for instructions on how to use FSL to recover your firmware should you be unfortunate enough to have this occur on your machine.

The AlphaBIOS console is loaded and started by the SRM console if the SRM console's OS_TYPE environment variable is set to "NT" or if the user enters the SRM console ALPHABIOS command at the SRM console prompt. AlphaBIOS is a separate, compressed image and is separately updatable using LFU.

In general, both the SRM and AlphaBIOS consoles should be updated at the same time since the two images which ship on the update CD-ROM are typically qualified against one another.

Firmware Update Information

1.3 PCI I/O Option Firmware Components - Revision Information

1.3 PCI I/O Option Firmware Components - Revision Information

You can also flash update firmware on certain PCI I/O options supported by the AlphaServer 4100 using LFU. Version V5.2-1 of the SRM console provides support for updating the following devices' firmware:

Table 1-4 I/O Module Firmware Revision Matrix

Name	Firmware Rev	Update File Used By LFU
CIPCA	A315	CIPCA315.SYS
DEFPA	V3.10	DFXAA310.SYS
KZPSA	A11	KZPSAA11.SYS
KZPDA	V5.57	RHSRMROM.SYS, ships with SRM Console ¹
KZPBA	V5.57	RHSRMROM.SYS, ships with SRM Console ¹

¹On a power-up/reset, the SRM console loads adapter firmware from console's system flash ROM into NVRAM on the I/O module for all Qlogic ISP1020-based PCI options such as the KZPDA and KZPBA. One updates SRM console firmware to update ISP1020-based PCI option firmware. V5.3-1 console ships with V5.57 firmware for ISP1020-based adapters. Note that this only applies for SRM console booting, i.e. for customers running DIGITAL UNIX and/or OpenVMS Alpha.

Other options, such as the KZPSC RAID controller also provide firmware update capability. However, LFU does not support KZPSC or KZPAC firmware updates. Refer to the Controller Installation and Standalone Utility User's Guide for your particular StorageWorks RAID Array subsystem should you need to update your RAID subsystem's firmware.

1.4 Configuration Utility Kit and Version Information

The EISA Configuration Utility (ECU) is available on separate media (floppy disks) for use on AlphaServer 4100 systems. The RAID Configuration Utility (RCU) ships on both floppy and the Alpha Firmware CD. The KZPSA Configuration Utility ships on the Alpha Firmware CD. For compatibility with this firmware release, the minimum revisions of the configuration utilities given in Table 1-5 must be used if required.

Table 1-5 Configuration Utility Revisions

Utility	Kit No.	Part No.	Minimum Rev.
ECU (VMS/UNIX)	QA-01YAA-HC	AK-Q2CRH-CA	V1.9
RCU	QB-2XHAH-SB	-	V3.2
KZPSA Utilities			
- FWUPDATE.EXE			V1.4 ¹
- CNFGDIAG.EXE			V1.5 ¹

¹Using earlier versions of the KZPSA utilities on your AlphaServer 4100 will corrupt your KZPSA adapter's NVRAM and render your system unusable!

1.5 Alpha Systems Firmware Quarterly Update Kit

The Alpha Systems Firmware Update Kit ships on a CD-ROM. Table 1–6 lists the kit part numbers. All the binary update images and release notes for the AlphaServer 4100 platform will be released in the [AS4X00], [OPTIONS], and [DOC] directories of the Alpha Systems Firmware Update V5.3 CD-ROM.

Table 1–6 Ordering Information

Item	Order Number	Part Number	Media Rev.
Customer Firmware Kit Qtrly Update Service	QY-003AA-A8		
Customer Firmware Kit	QZ-003AA-E8.5.3		
Internal Firmware Kit	QZ-003AA-F8.5.3		
CD-ROM and Release Notes Overview		AI-R0UFH-BE	
Release Notes Overview		AA-PW8YZ-TS	
CD-ROM		AG-RCFBB-BS	5.3
License Letter		AV-PYW4G-TS	

1.6 Accessing Firmware Over the Internet

Many customers rely upon the Customer Firmware Kit quarterly update service (includes Alpha Firmware Update CD-ROM) for their firmware updates. Firmware updates can also be obtained via the Internet, at the following address:

<ftp://ftp.digital.com/pub/Digital/Alpha/firmware/readme.html>

Using a World Wide Web browser, use the following URLs:

*<http://ftp.digital.com/pub/Digital/Alpha/firmware/readme.html>
<http://ftp.digital.com/pub/Digital/Alpha/firmware/v5.3/as4x00>
<http://ftp.digital.com/pub/Digital/Alpha/firmware/v5.3/options>
<http://ftp.digital.com/pub/Digital/Alpha/firmware/v5.3/doc>*

The Web pages are organized by CD release (/V5.1, /V5.2, etc.) For each CD-ROM version, there are directories for each AlphaServer platform as well as a common options area for I/O option firmware. In addition, a /interim page is maintained for products such as the AlphaServer 4100 which ship between Alpha Firmware CD releases. Watch for firmware updates in the /interim/as4x00 directory as well as future CD-ROM releases.

Console firmware update images and associated files are located in the /as4x00 directory. I/O option firmware files are accessible via the /options directory. Release notes are accessible via the /doc directory.

The above-mentioned readme.html file describes the overall firmware directory structure and how the files can be downloaded and used.

Note

Make sure you copy all of the necessary files when downloading firmware images. If updating via network (MOP), you will need to modify the copied files' attributes before they can be used in a MOP server

Firmware Update Information

1.6 Accessing Firmware Over the Internet

environment. See Chapter 2 for details on downloading firmware and performing firmware updates.

1.6.1 Proper Transfer Types For Use With FAT-Format Floppy Updates

When copying files, via ftp, to be used for update via FAT-Formatted floppy diskette you must use the ascii transfer type for the .txt files and the binary transfer type for the .sys files. For example:

- Prior to copying the .txt files issue the ascii command at the ftp prompt:

```
ftp> ascii
200 TYPE set to ASCII
ftp>
```

- Prior to copying the .sys files issue the bin command at the ftp prompt:

```
ftp> bin
200 TYPE set to IMAGE
ftp>
```

1.7 Firmware Release Notes for Windows NT Customers

Release notes for the AlphaBIOS console are shipped separately on the Alpha Firmware CD (in the DOC directory) and are also shipped as part of the *Microsoft Windows NT X.XX Release Notes for DIGITAL Alpha Systems* floppy diskette. The diskette contains a readme.txt, plus a .hlp file for AlphaBIOS and a .txt file for printing the help file. The AlphaBIOS release notes can also be found on the Windows Enterprise Computing web pages at the following URL:

<http://www.windows.digital.com/support/driver.asp>

Follow the links from the DIGITAL Alpha Systems drivers and firmware to the AlphaServer 4100 family for the AlphaBIOS release notes document.

1.8 AlphaServer 4100 Documentation

These release notes do not describe how to use the console or other firmware. For further information about using and updating the firmware on your machine, please refer to the orderable documentation listed in Table 1-7.

Table 1-7 Orderable Documentation for the AlphaServer 4100

Document Title	Part Number
AlphaServer 4100/4000 Configuration and Installation Guide	EK-4100A-CG
AlphaServer 4000 System Drawer User's Guide	EK-4000A-UG
AlphaServer 4100 System Drawer User's Guide	EK-4100A-UG
AlphaServer 4100 Service Manual (hard copy)	EK-4100A-SV
AlphaServer 4100 Service Manual (diskette)	AK-QXBJA-CA

Refer to the AlphaServer 4000/4100 Release Notes for other system release note information (part number EK-4100A-RN).

Firmware Update Instructions

The following sections provide instructions for updating your system firmware.

2.1 Updating Your System Firmware

The SRM console's built-in loadable firmware update utility (LFU) is used to update your console firmware (SRM and AlphaBIOS consoles). LFU can also be booted as a monolithic image off an update CD (e.g. using the Alpha Firmware Systems Update CD-ROM).

IMPORTANT NOTE:The SRM V5.3 firmware relocates the AlphaBIOS image to a different sector in flash ROM. Use of the built-in LFU will require that the update procedure be repeated a second time to ensure the AlphaBIOS is properly relocated in flash ROM. Please read on for more details on the update changes listed in this chapter.

The LFU utility can also be used to update KZPSA, DEFPA, and CIPCA firmware. Mylex DAC960 RAID options such as KZPSC and KZPAC are not supported by LFU. Refer to the Controller Installation and Standalone Utility User's Guide for your particular StorageWorks RAID Array subsystem should you need to update your RAID subsystem's firmware.

LFU supports multiple update devices: local SCSI CD-ROM (CDA0), local floppy (DVA0), and local network - Ethernet (EWA0) and FDDI (FWA0). Other load devices are supported for the advanced user. Refer to the *AlphaServer 4100 System Drawer User's Guide* for more information about LFU and other console commands, environment variables to set when performing updates off a network device, and update procedures.

Over time, you may wish to update to newer firmware versions as features are added, new I/O option support is added, and bug fixes are made. Updates are typically issued about once per quarter.

2.2 Preparing For The Update

You will first need to locate the appropriate firmware update files. Look in <http://ftp.digital.com/pub/Digital/Alpha/firmware/V5.3> for the */as4x00*, */options*, and */doc* subdirectories for the files you'll need. The list of files required is provided below.

The SRM console's `SHOW VERSION` command can be used to determine your SRM console version. The AlphaBIOS console's version can be determined either by starting the AlphaBIOS console via the `ALPHABIOS` command or by starting LFU via the SRM console's `LFU` command. You can then bypass the update file load sequence by pressing `RETURN` when LFU asks you to specify a load device. A subsequent `LIST` command at the `UPD>` prompt will display the current revision of AlphaBIOS (and SRM) console firmware.

Firmware Update Instructions

2.2 Preparing For The Update

If you don't have access to the Alpha Systems Firmware Update CD, you'll need to copy the appropriate firmware files to a local computer system. If you'll be updating via floppy, you'll need either a PC with a 1.44MB compatible floppy drive or an OpenVMS machine with access to a 1.44MB floppy drive. If you'll be updating via network (local MOP server), you'll need to copy the appropriate files to your local MOP server's MOM\$LOAD area with appropriate file protection to allow your AlphaServer 4100 system to be served by the local MOP server. You will also need to modify the file attributes of the downloaded files. See Section 2.2.5 for more details.

Refer to Section 1.6 for pointers to the DIGITAL Web pages for firmware release and update information.

2.2.1 SRM V5.3 LFU command changes

The 5.3 SRM console relocates AlphaBIOS to a new sector in flash ROM. This relocation change affects updates via the LFU command. Use of the "LFU" command for updates from either CD-ROM, floppy or the network will require the process to be executed twice. The basic steps required are as follows:

1. Run LFU
2. Update SRM
3. Exit LFU
4. Run LFU
5. Update AlphaBIOS
6. Exit LFU

If you update via the "BOOT" command from either the CD-ROM, (eg. "P00>>>boot dka500") or from your local MOP server's MOM\$LOAD directory (e.g. "P00>>>boot ewa0 -fi as4100_V5_3 -fl 0,0"), then it will not be necessary to run the update twice.

NOTE:

A downgrade to any previous version of firmware will require performing the update procedure twice for all methods of update.

2.2.2 Updating Using the Alpha Systems Firmware Update V5.3 CD

If you have a copy of the V5.3 (or greater) CD-ROM, simply insert it into your AlphaServer 4100's/4000's local CD-ROM drive. To run the update utility, boot the CD directly by typing "BOOT DKA500" (or equivalent CD-ROM device name).

Alternatively, you can type "LFU" at the SRM console prompt and answer "CDA0" and "AS4X00FW"; then perform the desired update(s).

NOTE:

The update procedure must be done twice if using the LFU command method of update. Please view the information under Section 2.2.1.

A readme file is provided for your convenience. If booting the CD-ROM directly, the readme is automatically displayed. If using console's LFU command, the readme is only displayed upon typing "README" at the LFU update prompt (UPD>).

2.2.3 Updating Using a FAT-Formatted Floppy Diskette

Depending upon what you wish to update, you'll need either one or two 1.44MB floppy diskettes. If you wish to update console firmware only or I/O option firmware only, you'll need only a single diskette. However, if you wish to update both console and I/O firmware, you'll need two separate diskettes.

Proper transfer type must be used when files are copied via ftp. Reference Section 1.6.1 for copying files, via ftp, that are to be used for FAT-format floppy updates.

If you'll be using a FAT-formatted diskette or diskettes, perform the following steps on your PC:

- Insert a 1.44MB FAT-formatted diskette in your floppy drive.
- Copy the following files to diskette #1:
 - as4x00cp.sys
 - as4x00fw.sys
 - rhreadme.sys
 - rhrmrom.sys
 - rhcrom.sys
- Copy the following files to diskette #2 if you'll be updating I/O option firmware:
 - as4x00io.sys
 - rhreadme.sys
 - cipca315.sys
 - dfxaa310.sys
 - kzpsaa11.sys

Be sure to copy all of the aforementioned files for the diskette(s) you need. Note that you may choose to omit certain files from your diskette, but to do so, you must edit the corresponding AS4X00**.TXT file or files which point to the various .SYS update images you care about. The AS4X00**.TXT files tell LFU which binary update images it should copy off the load device.

Once you've created your diskette(s), insert one or the other into your AlphaServer 4100's/4000's floppy drive.

2.2.4 Updating Using an ODS2-Formatted Floppy Diskette

Depending upon what you wish to update, you'll need either one or two 1.44MB floppy diskettes. If you wish to update console firmware only or I/O option firmware only, you'll need only a single diskette. However, if you wish to update both console and I/O firmware, you'll need two separate diskettes.

If you will be using an ODS2-formatted diskette or diskettes, use the following OpenVMS command procedure(s) to create your floppy diskette(s):

Firmware Update Instructions

2.2 Preparing For The Update

If creating a diskette for updating your console only:

```
$!  
$! make_rawhide_ods2cp.com  
$!  
$ 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 as4x00fw.txt dva0:[as4x00]as4x00fw.txt  
$ copy as4x00cp.sys dva0:[as4x00]as4x00cp.sys  
$ copy as4x00cp.txt dva0:[as4x00]as4x00cp.txt  
$ copy rhreadme.sys dva0:[as4x00]rhreadme.sys  
$ copy rhsrmrom.sys dva0:[as4x00]rhsrmrom.sys  
$ copy rharcrom.sys dva0:[as4x00]rharcrom.sys  
$ dismount dva0:  
$ set noverify  
$ exit
```

If creating a diskette for updating your I/O option firmware only:

```
$!  
$! make_rawhide_ods2io.com  
$!  
$ 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 as4x00fw.txt dva0:[as4x00]as4x00fw.txt  
$ copy as4x00io.sys dva0:[as4x00]as4x00io.sys  
$ copy as4x00io.txt dva0:[as4x00]as4x00io.txt  
$ copy rhreadme.sys dva0:[as4x00]rhreadme.sys  
$ copy cipca315.sys dva0:[options]cipca315.sys  
$ copy dfxaa310.sys dva0:[options]dfxaa310.sys  
$ copy kzpsaa11.sys dva0:[options]kzpsaa11.sys  
$ dismount dva0:  
$ set noverify  
$ exit
```

Once you've created your diskette(s), insert one or the other into your AlphaServer 4100's/4000's floppy drive.

2.2.5 Updating Off Network Via Your Local MOP Server

Use one of the following methods for Network updates.

2.2.5.1 Updating Off Network via BOOT command

Copy the following file to your local MOP server's MOM\$LOAD directory, for using the BOOT command, e.g. "P00>>>boot ewa0 -fi as4100_V5_3 -fl 0,0":

```
as4100_V5_3.sys
```


2.2.5.2 Updating Off Network via LFU command

Copy all of the following files to your local MOP server's MOM\$LOAD directory, if using the LFU command, e.g. "P00>>>lfu". Answer the update utility questions for your load device with the network controller, eg. "ewa0" and for the firmware files list with the default filename, eg. "as4x00fw".

```
as4x00cp.sys  
as4x00fw.sys  
as4x00io.sys  
cipca315.sys  
dfxaa310.sys  
kzpsaa11.sys  
rharcrom.sys  
rhreadme.sys  
rhsrmrom.sys
```

Make sure the files will be accessible via your target AlphaServer 4100 system. Also, be sure not to change the names of any files if using the SRM console LFU command update method. Downloaded files require an additional step for MOP loads; the file attributes must be modified to a proper VMS fixed-record format. Use the following OpenVMS command on each downloaded file before using the files for MOP booting.

```
$ set file/attr=(rfm:fix,lrl:512,mrs:512,rat:none) *.sys
```

2.3 Performing The Update

If your machine is currently running an operating system, issue the appropriate shutdown command to gracefully shut down your operating system. You may need to use the front-panel Halt button (depressed, so Halt LED is on) and a subsequent system reset to halt your machine at the SRM console.

If running DIGITAL UNIX or OpenVMS Alpha, once halted at the SRM console, reset the machine and wait for console to come back up. Firmware updates may not work following an operating system shutdown without a subsequent system reset. Always reset the machine following a UNIX/VMS shutdown if you plan on performing a firmware update. At the SRM console prompt, issue the appropriate BOOT or LFU command to start the update process.

If running Windows NT, either select the "Update AlphaBIOS" menu item in the Setup menu to run LFU automatically or select the SRM console (DIGITAL UNIX or OpenVMS operating system) and then reset your machine to manually start LFU via the SRM BOOT or LFU command.

The LFU command will ask you to specify a load device - the device from which LFU will load the console and/or I/O option firmware update files.

- If local CD-ROM, answer "CDA0".
- If floppy, answer "DVA0".
- If network, answer "EWA0" if DIGITAL PCI Ethernet or "FWA0" if DIGITAL PCI FDDI (DEFPA).

LFU will then prompt for a firmware files list file name. Use the following guide to ensure that you have provided the appropriate response:

- If local CD-ROM, answer "AS4X00FW".

Firmware Update Instructions

2.3 Performing The Update

- If floppy, answer "AS4X00CP" or "AS4X00IO" depending upon whether you wish to update only console or only I/O option firmware. You must have the diskette with the corresponding files list in your drive.

Note: if using two diskettes, after updating off one floppy, you can perform remaining updates off diskette #2 by re-invoking LFU via the LFU command at the utility's UPD> prompt and providing the alternate firmware files list file name when requested for input.

- If network, answer "AS4X00FW", "AS4X00CP", or "AS4X00IO" depending upon whether you want to update all firmware (console + I/O option), only console, or only I/O option, respectively.

NOTE:

For V5.3 firmware updates, via the LFU command update method, you must perform the update procedure twice. The first update for the SRM console firmware and the second update for the AlphaBIOS firmware.

A sample session is provided below of an update of SRM console from V5.2-1 to V5.3-1 and AlphaBIOS V5.64-1 to AlphaBIOS V5.67-0. The update method, in this example, is using images copied to floppy diskettes.

Reminder: Updates via this LFU command method must be performed twice. The first time is to update the SRM firmware. The second time to update the AlphaBIOS firmware. I/O option firmware can be updated at either time. Failure to update the SRM and then the AlphaBIOS will leave the AlphaBIOS image as invalid. Users will not be able to invoke AlphaBIOS or run ARC-based utilities until the AlphaBIOS is updated from the SRM V5.3 console.

```
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 RHREADME from DVA0 .
Copying RHRMROM from DVA0 .....
Copying RHARCROM from DVA0 .....
Copying CIPCA315 from DVA0
Please insert next floppy containing the firmware,
Press <return> when ready. Or type DONE to abort.
Copying CIPCA315 from DVA0 .
Copying DFCAA310 from DVA0 ...
Copying KZPSAA11 from DVA0 ...
```

Firmware Update Instructions 2.3 Performing The Update

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.

UPD> list

Device	Current Revision	Filename	Update Revision
AlphaBIOS	V5.64-1	arcrom	V5.67-0
cipca0	A315	cipca_fw	A315
kzpsa0	All	kzpsa_fw	All
pfi0	3.10	dfxaa_fw	3.10
srmflash	V5.2-1	srmrom	V5.3-1

UPD> update srm*

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

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

DO NOT ABORT!

srmflash Updating to V5.3-1... Verifying V5.3-1... PASSED.

UPD>exit

Initializing. . .

Now repeat the update procedure and update the AlphaBIOS. At this point in the update process a list command will show no current revision for AlphaBIOS. No current revision for AlphaBIOS is expected. Once updated under SRM V5.3, the AlphaBIOS will be properly located in flash ROM and valid.

The missing files shown under the list command output, in this next update session, are the result of answering "done" to the request for the second floppy.

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 RHREADME from DVA0 .
Copying RHSRMROM from DVA0
Copying RHARCROM from DVA0
Copying CIPCA315 from DVA0

Please insert next floppy containing the firmware,
Press <return> when ready. Or type DONE to abort. done

Firmware Update Instructions

2.3 Performing The Update

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.

```

UPD> list

Device          Current Revision  Filename          Update Revision
AlphaBIOS              A315             arcrom            V5.67-0
cipca0                All              cipca_fw         Missing file
kzpsa0                3.10             kzpsa_fw         Missing file
pfi0                   V5.3-1           dfxaa_fw         Missing file
srmflash              V5.3-1           srmrom           V5.3-1

UPD> update al*
WARNING: updates may take several minutes to complete for each device.
Confirm update on:          [Y/(N)] y
                             DO NOT ABORT!
AlphaBIOS          Updating to V5.67-0...  Verifying V5.67-0...  PASSED.
UPD>exit
Initializing. . .

```

A sample session is provided below of an update of SRM console from V5.2-1 to V5.3-1 and AlphaBIOS V5.64-1 to AlphaBIOS V5.67-0. The update method, in this example, is a BOOT command of a MOP file located in the local MOM\$LOAD directory.

```

AlphaServer 4X00 Console V5.2-1, 26-MAY-1998 15:47:28
P00>>
P00>>>b ewa0 -fi as4x00_v5_3 -fl 0,0
(boot ewa0.0.0.5.1 -file as4x00_v5_3 -flags 0,0)

Trying MOP boot.
.....

Network load complete.
Host name: XXXXXX
Host address: xx-xx-xx-xx-xx-xx

bootstrap code read in
Building FRU table
base = 200000, image_start = 0, image_bytes = 283400
initializing HWRPB at 2000
initializing page table at 1f2000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
012345
677789
P01>>>START 6000
P01>>>

P02>>>START 6000
P02>>>

```

Firmware Update Instructions 2.3 Performing The Update

```
P03>>>START 6000
P03>>>
9876543210
starting console on CPU 0
sizing memory
  0   128 MB SYNC
  1   128 MB SYNC
  2   128 MB SYNC
starting console on CPU 1
starting console on CPU 2
starting console on CPU 3

  bus 0 slot 1 - NCR 53C810
  bus 0 slot 3 - DEC KZPSA
  bus 0 slot 4 - PCI-PCI Bridge
    probing PCI-PCI Bridge, bus 2
      bus 2 slot 0 - QLogic ISP1020
  bus 0 slot 5 - DECchip 21040-AA
probing IOD0 hose 0
  bus 0 slot 1 - PCEB
    probing EISA Bridge, bus 1
  bus 0 slot 2 - S3 Trio64/Trio32
  bus 0 slot 3 - DE500-BA
  bus 0 slot 5 - CIPCA
configuring I/O adapters...
ncr0, hose 1, bus 0, slot 1
pks0, hose 1, bus 0, slot 3
isp0, hose 1, bus 2, slot 0
tulip0, hose 1, bus 0, slot 5
floppy0, hose 0, bus 1, slot 0
tulip1, hose 0, bus 0, slot 3
cipca0, hose 0, bus 0, slot 5
System temperature is 28 degrees C

Starting Firmware Update Utility
Copying source: to 11a7600 from 30fb800 size 187c00(1604608)

Unpacking firmware files
as4x00_readme adr = 1000020 len = 1400(5120)
readme      adr = 1001640 len = 1400(5120)
srmrom      adr = 1002c60 len = fae00(1027584)
arcrom      adr = 10fdc80 len = 80000(524288)
cipca_fw    adr = 117dea0 len = ce00(52736)
dfxaa_fw    adr = 132f220 len = 38a00(231936)
kzpsa_fw    adr = 1367e40 len = 74000(475136)
\

      ***** 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.
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
```

Firmware Update Instructions

2.3 Performing The Update

Device	Current Revision	Filename	Update Revision
AlphaBIOS		arcrom	V5.67-0
cipca0	A315	cipca_fw	A315
pks0	All	kzpsa_fw	All
srmflash	V5.2-1	srmrom	V5.3-1
		dfxaa_fw	3.10

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

Confirm update on: srmflash          [Y/(N)] y
                    DO NOT ABORT!
srmflash  Updating to V5.3-1...  Verifying V5.3-1...  PASSED.

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

Confirm update on:                    [Y/(N)] y
                    DO NOT ABORT!
AlphaBIOS Updating to V5.67-0...  Verifying V5.67-0...  PASSED.

UPD>exit
Initializing. . .
```

Refer to AlphaServer 4100 documentation for more details about running LFU, including environment variables which must be set if you choose to perform updates off a network device.

For Windows NT fatal error logging you must initialize the eeprom logging area, after the 5.3 updates have been completed. Please refer to the notes found in Section 3.8.

Things You Should Know the First Time You Power On Your Machine

It is recommended that you read this section in its entirety prior to using your AlphaServer 4100 machine.

3.1 Memory Tests Can Take a Very Long Time!

Memory is tested by each CPU each time you power on or reset your machine. These tests can take upwards of several minutes on very large memory, single-CPU machines. The XSRM firmware responsible for testing memory prints a rotating asterisk as part of the operator control panel (OCP) display during the memory march test (Test 24). The rotating asterisk stops once testing has completed. Additionally, beginning with V3.0 SRM console, if both the `CONSOLE` environment variable is set to serial and the `MEMORY_TEST` environment variable is set to full an estimated test time will be printed.

Note

If running OpenVMS or DIGITAL UNIX, the `MEMORY_TEST` environment variable must be set to `FULL` (default). `PARTIAL` and `NONE` are not supported.

3.2 Selecting Which Console Is Loaded and Your Display Device

Your system likely came pre-configured to run a particular operating system. There are two SRM console environment variables that play a key role in determining which console will be the final console loaded on a power-on/reset (SRM console or AlphaBIOS console) and to which display device (VT-type terminal or graphics device) the console will default. These two environment variables (EVs) are the `OS_TYPE` and `CONSOLE` EVs, respectively.

If `OS_TYPE` is set to "NT", the SRM console will automatically load and start the AlphaBIOS console from system flash ROM during power-on/reset. If `OS_TYPE` is set to "OpenVMS" or "UNIX", the SRM console will not load AlphaBIOS. If `OS_TYPE` is set to "NT", you can depress the front panel Halt button (LED on) and then reset the machine to force the SRM console to not load AlphaBIOS. In this situation, the SRM console will stop at the SRM console prompt. Not only will it not load AlphaBIOS if `OS_TYPE=NT`, but it will also not allow booting until the Halt button has been restored to the out position.

If `CONSOLE` is set to "SERIAL", the SRM console will power-on in serial mode and will print power-up display information to COM1 (assuming a VT-like device is connected at the other end). If `CONSOLE` is set to "GRAPHICS", the SRM console expects to find a VGA card in PCI0 and will attempt to print to the VGA monitor after PCI sizing and configuration has completed.

Things You Should Know the First Time You Power On Your Machine

3.2 Selecting Which Console Is Loaded and Your Display Device

Note: you will not see any console display output on your VT or VGA display if CONSOLE is set to "GRAPHICS" until power-up testing and sizing has completed *and* VGA initialization has completed. This can take upwards of several minutes depending upon your system configuration. With CONSOLE set to "GRAPHICS", you will only see display output on your operator control panel (OCP) display until the PCIs have been (and more specifically, the VGA has been) initialized, at which point you should see output to the console terminal display device (in this case, VGA).

Once console has fully initialized the system, if OS_TYPE is not set to "NT", the SRM console will allow logins at either the VT or graphics device, irrespective of the CONSOLE EV setting. This assumes the SRM console's TT_ALLOW_LOGIN environment variable is set to "1". For example, on a machine configured with CONSOLE set to "GRAPHICS", pressing `[Return]` or `[Enter]` at the keyboard of a connected VT device should return a console prompt at the VT device (i.e. over COM1). Console will only honor this login attempt if OS_TYPE is not set to "NT" and only after console has fully initialized the system and attempted to return the console prompt on the graphics display device.

The same holds true in the reverse situation where CONSOLE is set to "SERIAL", but the user wishes to log in at a connected and properly cabled and configured graphics display device.

3.3 Configuring Your Machine Prior to Booting

There are several SRM console environment variables and built-in utilities that you may need to use to set up your system prior to booting the OpenVMS Alpha or DIGITAL UNIX operating system. Examples include:

- Setting EWn0_MODE and EWn0_PROTOCOLS environment variables (EVs) for your Ethernet network device.
- Setting pkn0_host_id, pkn0_fast, pkn0_soft_term, and pkn0_disconnect EVs to configure your PCI SCSI controllers. With the V5.1 release a new driver was implemented for KZPSA devices which eliminated the KZPSAn_XXXX EVs for setting up KZPSA parameters. Use the pkn0_host_id, pkn0_fast and pkn0_termprwr EVs for setting up KZPSA parameters. [The ARC-based KZPSA utilities can also be used for these purposes. The SRM console KZPSA_EDIT command has been removed with the use of a new driver for the KZPSA controller. See Section 3.9 for related information.]
- Configuring your KFPSA and DSSI subsystem using the SET HOST -DUP command and/or CDP command.

You may also need to run one or more of the following ARC-based utilities before booting your operating system:

- EISA Configuration Utility (ECU)
- RAID Configuration Utility (RCU)
- KZPSA Configuration Utility (or use the SRM console's pk*_XXXX environment variables to configure host id and fast mode)

Refer to the *AlphaServer 4100 System Drawer User's Guide* for more details about configuring your machine prior to booting. Chapter 4 also provides a brief overview on running ARC-based utilities.

Things You Should Know the First Time You Power On Your Machine

3.4 SRM Console Firmware Supported Boot Devices

3.4 SRM Console Firmware Supported Boot Devices

The PCI I/O options/devices listed in Table 3–1 are supported as SRM console boot devices by the V4.8 or above SRM console:

Table 3–1 Supported Boot Devices (SRM Console V4.8 or above)

Name	Description
KFPSA	(PCI NCR825 DSSI)
KZPDA	(PCI Qlogic ISP1020 FWSE SCSI / PPB bridge)
KZPSA	(PCI FWD SCSI)
KZPSC	(PCI RAID 1- and 3-port FWSE SCSI)
KZPAC	(PCI RAID 1- and 3-port FWSE SCSI)
KZPBA	(PCI Qlogic ISP1020 16b FWD SCSI)
KZPAA	(PCI NCR810 SE SCSI)
CIPCA	(PCI CI)
DE435	(PCI Ethernet, MOP and BOOTP)
DE450	(PCI Ethernet, MOP and BOOTP)
DE500	(PCI Fast Ethernet, MOP and BOOTP)
DEFPA	(PCI FDDI and CDDI single- and dual-attach, MOP and BOOTP)
FLOPPY	(Local RX23 1.44 MB Floppy)
CD-ROM	(Local NCR810 SCSI CD-ROM)

Note: the AlphaServer 4100 SRM console does not support any EISA options as boot devices.

3.5 New Features, Changes and Bugs Fixed in the V5.3 SRM Console

The following items are supported with V5.3 console firmware:

1. UNIX V4.0E (also V4.0D, V4.0B, V4.0A, 3.2G and V3.2F)
2. VMS V7.1-1H1 (also V7.1, V6.2-1H3)

The following changes, since the V5.2-1 SRM console release, are part of the V5.3 SRM console.

1. Two PALcode changes have been included in this release.
 - A Digital UNIX PALcode change was made to fix a problem of incorrect data being stored for the FILL_SYN and ISR registers for EV5 detected CRDs. This problem is specific to the Digital UNIX PALcode, Version 1.21-24, released with the SRM console V5.2 on the Alpha Systems Firmware CD V5.2.
 - A change to both OpenVMS and Digital UNIX PALcode was made to store the pci_err1 register contents before clearing the CAP register. This change will cause the pci_err1 register information to be locked in before the CAP register is cleared.
2. Code was included for the NCR 53C896 to correct a "controller not found" error seen upon booting for that device.

Things You Should Know the First Time You Power On Your Machine

3.5 New Features, Changes and Bugs Fixed in the V5.3 SRM Console

3. Device recognition has been added for a revised version (new chip with device ID 0x9080) of the PBXDP-AB (4 port, PCI Synchronous Communications Controller) and the PBXDP-AC (8 port, PCI Synchronous Communications Controller).
4. Device recognition has been added for the DEGPA-SA, Gigabit Ethernet adapter.
5. The SRM 5.3 code includes latent support for I2O.
6. Changes were made for Unattended Firmware Updates to make it independent of the currently installed console. The V5.3 image file includes all the update and data files and is being released as the V5.3 LFU image.
7. Window NT serviceability support (fatal error logging support) has been included.
 - The relocation of AlphaBIOS to a different sector in flash ROM was required to accommodate this new support.
 - New eeprom commands were added to handle display of Windows NT error logs under SRM console. Please reference Section 3.8 for details on these commands.
 - Minimum software revision information for Windows NT serviceability support is listed under Section 3.8.

Note:

Please view Chapter 2 for important information and changes about updating firmware.

8. A workaround fix for the Matrox Millennium II Graphics (device and vendor ID = 0x051b102b) adapter that would hang the SRM console in a multi-CPU configuration. This device is an NT-only system option and not supported under the SRM console. Millennium is a trademark of Matrox. Inc.
9. Code changes have been made to filter out non-disk and non-tape "JK" class devices, that may incorrectly appear from KZPSAs or HSZ70s, under the show device or the show config commands.

3.6 Changes in V5.67 AlphaBIOS

1. PCI configuration enhancements.
 - Relax PCI configurator error handling devices that reported non-compliant PCI resources. These enhancements permit devices that request PCI resources in a non-compliant manner to function under Windows NT.
2. Latent NT serviceability support
3. Includes an SRM-dependency server-management warning to inform customers of potentially invalid firmware configurations
 - Requires SRM V5.3 console.
 - Requires Updated HAL.

Things You Should Know the First Time You Power On Your Machine

3.6 Changes in V5.67 AlphaBIOS

4. Post NT 5.0 (Beta 2) issues.
 - Add support for NT 5.0 advanced boot configuration menu (Safeboot).

3.7 SRM Console Firmware Bugs and Restrictions

The following are known bugs and restrictions with AlphaServer 4100 SRM console firmware version V5.3.

1. Configuring an HSD30 at a higher DSSI node ID than that of the KFPSA will result in the SRM console not seeing devices when a console SHOW DEVICE command is issued.
2. If running OpenVMS or DIGITAL UNIX, the MEMORY_TEST environment variable must be set to FULL (default). PARTIAL and NONE are not yet supported.
3. SRM console V4.8-6 or above supports mixing of the B3002-AB (5/300 2-MB CPU) and B3004-BA CPUs within a system. If you mix modules, you must configure the system such that a B3002-AB is the primary CPU. NOTE: Systems running OpenVMS (V6.2-1H3 or V7.1) require a patch image (ALPCPU1601_071) to support the B3002 and B3004 in mixed configurations.
4. VGAs configured as console display devices must be in PCI0.
5. The system must be reset prior to running LFU from console. Booting the LFU off CD-ROM does not require a system reset.
6. Updating to SRM console V5.3 requires running the update procedure twice if not using the BOOT command update method for updates.
7. Downgrading from SRM console V5.3 requires the update procedure be run twice.

3.8 Windows NT serviceability information

3.8.1 Minimum software requirements

Minimum software revision information, for Windows NT serviceability support, is listed below along with the files location for each.

1. SRM console V5.3
 - Alpha Systems Firmware 5.3 Update CD
 - <http://ftp.digital.com/pub/Digital/Alpha/firmware/v5.3/as1200>
2. AlphaBIOS 5.67
 - Alpha Systems Firmware 5.3 Update CD
 - <http://ftp.digital.com/pub/Digital/Alpha/firmware/v5.3/as1200>
3. The following three items can be obtained from the Windows Enterprise Computing web pages, in the near future, at the following URL:
<http://www.windows.digital.com/support/driver.asp>
 - New HAL Rev. E
 - New PAL
 - SysErrLog.exe package (contains DecErSvr service and ErrorLog driver)

Things You Should Know the First Time You Power On Your Machine

3.8 Windows NT serviceability information

4. DECEvent NT Version 3.1 or greater.
 - <http://www.service.digital.com/decevent/>

3.8.2 Effects of Window NT Serviceability support on the update process

One of the most important changes, resulting from the implementation of Windows NT serviceability support, is the relocation of the AlphaBIOS to a different sector in flash ROM. This relocation was required to accommodate the space requirements for fatal error logging. All update methods, with the exception of a BOOT command update of the 5.3 image, will require the update process to be executed twice. The first time to update the SRM firmware and the second time to update the AlphaBIOS firmware. Failure to execute the process twice will leave the AlphaBIOS as an invalid image and prevent access to AlphaBIOS. View the information in Chapter 2 for update changes.

3.8.3 EEPROM commands for Windows NT error logging

The SRM V5.3 firmware uses a sector of flash (designated as an eeprom error logging area) for the support of Windows NT fatal error logging. Space for two halt error logs per CPU has been allocated. SRM eeprom commands have been included to initialize the logging area and to allow viewing of halt error log information. The error log viewing feature is a supplement to the Windows NT support.

3.8.3.1 Build eeprom

A new SRM command, `build -eeprom`, has been implemented to initialize and setup the eeprom error logging area. Initialization and setup of the eeprom logging area will be required after an update of firmware has been performed.

The following example shows the `build -eeprom` command.

```
P00>>>bu -e
Build EEPROM ? [Y/N]> y
.
      EEPROM built
P00>>>
```

3.8.3.2 Show eeprom

This example shows the eeprom halt area information displayed via the `show eeprom halt` command. No errors have been logged.

```
P00>>>show eeprom halt

Halt Data Logging is enabled
Logging Control Field valure = 0000
Actions logged = 0
P00>>>
```

3.8.3.3 Clear eeprom

The `clear eeprom halt` command is used to clear the eeprom halt logging area.

```
P00>>>clear eeprom halt
.P00>>>
```

Things You Should Know the First Time You Power On Your Machine

3.9 Additional notes for KZPSA changes implemented with the V5.1 release

3.9 Additional notes for KZPSA changes implemented with the V5.1 release

The driver code used for KZPSA adapters was changed resulting in the controller being represented as "pks" and no longer represented as "kzpsa".

Several changes to command usage change with use of this PKS driver.

- LFU updates under the V5.1 SRM console or later will no longer use the UPD>UPDATE KZPSA* command but will use UPD>UPDATE PKS* command.
- For showing devices attached to the KZPSA adapters use the command P00>>SHOW DEVICE PKS*

Below is an example of the new naming and previous naming output that would be displayed for the KZPSA adapter and attached devices.

Examples

SRM console output line for KZPSA obtained from P00>>>show config command.

For version V5.1 SRM console or later:

Slot	Option Name	Type	Rev	Name
5	DEC KZPSA	81011	0000	pks0

For SRM console verisons V5.0 or earlier:

Slot	Option Name	Type	Rev	Name
5	DEC KZPSA	81011	0000	kzpsa0

SRM console output line for KZPSA obtained from P00>>>show device

For version V5.1 SRM console or later use P00>>>SHOW DEVICE PKS*

```
polling pks0 (DEC KZPSA) slot 5, bus 0 PCI, hose 1
PKc.7.0.5.1      dkc      TPwr 1 Fast 1 Bus ID 7   P01  A11
dkc100.1.0.5.1  DKc100          RZ28D 0010
dkc200.2.0.5.1  DKc200          RZ28D 0010
```

For SRM console verisons V5.0 or earlier use SHOW DEVICE KZPSA*

```
polling kzpsa0 (DEC KZPSA) slot 5, bus 0 PCI, hose 1 TPwr 1 Fast 1 Bus ID 7
kzpsa0.7.0.5.1  dkc      TPwr 1 Fast 1 Bus ID 7   P01  A11
dkc100.1.0.5.1  DKc100          RZ28D 0010
dkc200.2.0.5.1  DKc200          RZ28D 0010
```

3.10 DIGITAL Fast EtherWORKS PCI 10/100 (DE500) Adapters and Auto-negotiation

The console supports the DIGITAL Fast EtherWORKS PCI 10/100-TX Adapters (DE500-AA and DE500-BA). These adapters support auto-negotiation which is a mechanism to advertise, to detect, and to negotiate line speed abilities of auto-negotiation supported devices on an ethernet wire. In auto-negotiate mode the user does not need to know the line speed of auto-negotiation supported devices on the other end of an ethernet wire.

Things You Should Know the First Time You Power On Your Machine

3.10 DIGITAL Fast EtherWORKS PCI 10/100 (DE500) Adapters and Auto-negotiation

Important

Auto-negotiate mode is NOT RECOMMENDED if you know the speed of your ethernet because of possible considerable delay when booting or when restarting the operating system. This is because the operating system will start/stop device drivers three times before the operating system is on-line when booting or before the operating system relinquishes control to the console on a shutdown..

Use auto-negotiation ONLY if the DE500-*A is connected to an ethernet which supports auto-negotiation. Otherwise the DE500-*A will respond with the default setting of 100Base TX full-duplex.

3.10.1 Set EW*0_Mode Auto-Negotiate

Example to set the DE500-AA or DE500-BA into auto-negotiation mode:

```
P00>>> set ewa0_mode auto-negotiate
```

The DE500-*A then advertises its abilities on the ethernet wire by sending a link code word on the ethernet wire. If the DE500-*A does not get a response (a link code word from another auto-negotiation supported device) the DE500-*A will set its line speed to 100BaseTx full-duplex. It will take several seconds before you see the SRM console P00>>> prompt to get the DE500-*A into auto-negotiate mode.

Below is an example of setting the adapter mode to auto-negotiate on a system where the Ethernet does not support auto-negotiation or there is no response from the Ethernet. From the console, you see the following display:

```
P00>>> set ewc0_mode auto-negotiate (Note:this takes several seconds)
ewc0: link failed : Using 100BaseTX full duplex
```

In the above case change ewc0_mode to Twisted to use the DE500-*A in a 10BaseTx environment.

3.10.2 Behavior Note on Systems with Multiple DE500's

Auto-negotiation mode is NOT RECOMMENDED on DIGITAL UNIX or OpenVMS systems with more than one DE500 because of possible considerable delay when booting or when restarting the operating system. This is because the operating system will start/stop drivers several times during a boot or reboot. It is recommended that you set the DE500-*A to the line speed of the ethernet wire instead of using auto-negotiate mode.

3.11 Note on UNIX installations

When installing DIGITAL UNIX from the graphics console, the screen may scroll past the following instructions to set console environmental variables and to boot the operating system. If you experience this symptom do the following to continue with the installation:

```
P00>>> set boot_osflags a
P00>>> set bootdef_dev <your boot disk>
P00>>> boot
```

Running EISA, RAID, and Other Configuration Utilities

*NOTE:*Relocation of AlphaBIOS to a different sector in flash ROM was implemented in the 5.3 release. Please ensure you have read Chapter 2. Of particular importance is the change for updating the SRM and AlphaBIOS firmware. Failure to have followed the procedure properly will invalidate the AlphaBIOS image. This invalid image problem is corrected by executing the LFU a second time and updating the AlphaBIOS.

To help configure an AlphaServer 4100 system, various utilities may need to be run before booting your operating system. The ECU, RCU, and KZPSA Configuration utilities are examples - these utilities run on top of the AlphaBIOS console since they use ARC-based callbacks based on the Advanced RISC Computing (ARC) Specification developed by Microsoft.

4.1 Setting Up Your System to Run ARC-based Utilities

To invoke one or more of these utilities, you must first bring up the AlphaBIOS console. Do so by entering the `ALPHABIOS` command at the SRM console prompt or by setting the SRM console's `OS_TYPE` environment variable (EV) to "NT" and then resetting your machine. If you have a graphics display device installed in your machine, you may wish to set the `CONSOLE` EV to "GRAPHICS" before invoking AlphaBIOS since it and the associated utilities are graphically oriented. [They do support serial line mode, however. See Section 4.2 for more details.]

4.2 Using a Serial line Interface to Run ARC-based Utilities

These utilities can be run either in graphics or serial mode. The SRM console's `CONSOLE` environment variable controls which mode AlphaBIOS runs in at the time it is loaded by the SRM console.

To run AlphaBIOS and ARC-based utilities in serial mode, `CONSOLE` must be set `SERIAL` and the terminal must be a VT320 or greater with the following settings:

- 8-bit character mode.
- '~' key set to send ESC.

Refer to your user documentation (e.g., *AlphaServer 4100 System Drawer User's Guide*) for details about running utilities such as ECU, RCU, and other ARC-based utilities.

Running EISA, RAID, and Other Configuration Utilities

4.3 Restrictions When Running KZPSA Utilities

4.3 Restrictions When Running KZPSA Utilities

You must use V1.4 of the KZPSA Firmware Update Utility (FWUPDATE.EXE) if you wish to use it rather than LFU to update your KZPSA firmware. Note: running earlier versions of the KZPSA FWUPDATE.EXE utility will corrupt the NVRAM on your KZPSA and disable the module and your system!

Restrictions also exist if using the KZPSA CNFGDIAG.EXE utility. For one, you must use version V1.5 or greater on an AlphaServer 4100 system. The following release notes apply to V1.5 of the CNFGDIAG.EXE utility:

Table 4-1 KZPSA CNFGDIAG.EXE (V1.5) Issues/Bugs With SCSI Options

Reset SCSI Bus	The bus will be reset, but an error message will be displayed after a timeout of about 1 minute on any subsequent reset attempts.
List devices	If the KZPSA SCSI ID is 15, the screen will clear rather than wait for 'any key'.

RESTORE_NVRAM and SAVE_NVRAM

A.1 Save NVRAM data in EEROM/TOY to a floppy file.

Save the system NVRAM data from 8KB EEROM and last 50 TOY RAM bytes onto a write-UN-locked FAT formatted floppy to a file. By default, if no script argument is specified, all NVRAM is saved to file ALLNVRAM.SAV. If the file already exists, then a copy of the original file is made to *.BAK. If that file exists, it is overwritten. Note, attempts to write to a write-locked floppy fail silently.

Syntax

```
save_nvram {all,arc,srm,toy}
```

Arguments

group

Specifies the group of NVRAM data to be saved. One of the following:

- **all** : All of the 8KB EEROM and 50 bytes of TOY RAM are saved in file `allnvram.sav`. This is the default, if no argument is specified.
- **arc** : ARC (AlphaBIOS) data in first 6KB of the 8KB EEROM is saved in file `arcnvram.sav`.
- **srm** : SRM console data in last 2KB of the 8KB EEROM is saved in file `srmnvram.sav`.
- **toy** : TOY console data in the 50 bytes of TOY RAM is saved in file `toynvram.sav`.

Examples

To save all the system NVRAM to an image on floppy:

```
>>> save_nvram
Save all NVRAM data to file fat:allnvram.sav/dva0.0.0.1000.0.
If file already exists, first copy original to a .bak file.
Please insert a write-UN-locked, FAT formatted floppy...
...and enter "y" and press Return to continue.
y
Checking for a FAT formatted floppy...
..Found it.
Checking for existing fat:allnvram.sav/dva0.0.0.1000.0...
..Found one.
Copying fat:allnvram.sav/dva0.0.0.1000.0 to .bak file...
..Succeeded.
Copying all NVRAM to fat:allnvram.sav/dva0.0.0.1000.0...
..Succeeded.
>>>
```

RESTORE_NVRAM and SAVE_NVRAM

A.2 Restore NVRAM data to EEROM/TOY from a floppy file.

A.2 Restore NVRAM data to EEROM/TOY from a floppy file.

Restore the system NVRAM data to 8KB EEROM and/or last 50 TOY RAM bytes from a floppy containing the NVRAM save file(s). By default, if no script argument is specified, all NVRAM is restored from file ALLNVRAM.SAV.

Syntax

```
restore_nvram {all,arc,srm,toy}
```

Arguments

group

Specifies the group of NVRAM data to be restored. One of the following:

- **all** : All of the 8KB EEROM and 50 bytes of TOY RAM are restored from file `allnvram.sav`. This is the default, if no argument is specified.
- **arc** : ARC (AlphaBIOS) data in first 6KB of the 8KB EEROM is restored from file `arcnvram.sav`.
- **srm** : SRM console data in last 2KB of the 8KB EEROM is restored from file `srmnvram.sav`.
- **toy** : TOY data in last 50 bytes of 64 bytes in TOY RAM is restored from file `toynvram.sav`.

Examples

To restore a previously saved ARC NVRAM image:

```
>>>restore_nvram arc
Restore arc NVRAM data from the file fat:arcnvram.sav/dva0.0.0.1000.0.
Please insert the floppy containing this file...
...and enter "y" and press Return to continue.
y
Looking for file fat:arcnvram.sav/dva0.0.0.1000.0...
...Found it.
Restoring system NVRAM data...
...Succeeded.
>>>
```