V5.4 Console Firmware Release Notes

AlphaServer 1000 Systems

Console Firmware V5.4 (Final Release)
March 1999

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1 Scope

The document lists significant changes in this firmware release and describes methods to update console firmware and console-supported i/o options firmware. This document does not describe the console firmware internals or console architecture.

1.1 Audience

The audience for this document is intended for individuals responsible for operating system installations or upgrades and for console firmware and console-support option firmware updates.

1.2 Golden Rules to Updating Firmware

Update console firmware before installing or updating an operating system. Update both consoles (SRM and ARC/AlphaBIOS) to ensure compatibility with the associated operating system. Run the appropriate EISA Configuration Utility [ECU] when switching between Windows NT and Tru64Unix/OpenVMS, or after doing a cpu_upgrade or a cpu_downgrade under the Loadable Firmware Utility.

1.3 Internet Access to Firmware

Internet access to console firmware and to AlphaBIOS/HAL and NT Drivers.
www.compaq.com/support/ (click on ***Alpha Systems*** under the "***Downloadable Drivers & Utilities***" menu).
http://www.compaq.com/support/files/alphant/index.html (Current version of BIOS, HAL and NT Drivers)

1.4 Related Documentation

Table 1-1 Related Documentation

AlphaServer 1000/1000A Series User Information	English Spanish Italian German	EK-PCDSA-UI EK-PCDSS-UI EK-PCDSI-UI EK-PCDSG-UI	French Dutch Japanese	EK-PCDSP-UI EK-PCDSH-UI EK-PCDSY-UI
AlphaServer 1000/1000A Series CPU Module Information	English Spanish Italian German	EK-PCDSA-CI EK-PCDSS-CI EK-PCDSI-CI EK-PCDSG-CI	French Dutch	EK-PCDSP-CI EK-PCDSH-CI
AlphaServer 1000/1000A Series Installation	English	EK-PCDSA-II		

2 Read Me First

2.1 Functional Changes the V5.4 Release

- SRM Console Changes
  - Console support for Intel 82558 Ethernet cards
  - Console support for ELSA Gloria Synergy graphic cards
  - Fibre Channel [KGPSA] on AlphaServer 800 Systems. See restrictions.
  - Console recognition of ATM Adapters
  - Console "Date command" removed
- AlphaBIOS Console V5.68 & ARC Console V4.58

2.2 Firmware Revision Matrix

The following matrix shows the minimum given operating system version for a given console firmware.

Revision Matrix for AlphaServer 1000		
Firmware CD Version	V5.4	V5.3
Firmware CD Version /Date	March 1999	October 1998
Operating System		
OpenVMS	V7.2	V7.1-2
Tru64 Unix	V4.0E	V4.0D
Windows NT	V4.0	V4.0
Console Firmware		
	Model 4/xxx	**Model 5/xxx**
SRM Version	V5.4-101	V5.4-104
AlphaBIOS Version	V4.58	V5.68

2.3 Anomalies, Restrictions, & Workarounds

2.3.1 General Information

2.3.1.1 Update CCMAB02 Firmware from the LFU

Console firmware V5.4 or greater enables the ability to update CCMAB02 (memory channel 2) firmware from the Loadable Firmware Utility.

2.3.2 SRM Console Specific Information

2.3.3 I/O Options Specific Restrictions

2.3.3.1 PB2GA-JC/JD VGA Graphics Controller

The SRM console environment variable BOOT_RESET must be set to OFF to use the PB2GA-JC or -JD graphics card. OFF is the default value for BOOT_RESET. >>> set boot_reset off

2.3.3.2 KZPBA-DB

The KZPBA-DB, Dual Channel PCI to UltraSCSI Adapter, is restricted to the primary PCI bus slots.

2.3.3.3 PBXGB-AA/CA

The PBXGB-AA and -CA graphics cards are restricted to the primary PCI bus slots.

2.3.3.4 PBXDA-AC

The PBXDA-AC - 16 Port High Performance Asynchronous Multiplexer Controller has the following restrictions:

- No Restrictions on AlphaServer 800, Digital Server 3300, or AlphaServer 1000A Model 5/xxx systems
- Restricted to SECONDARY PCI bus slots on AlphaServer 1000A Model 4/xxx systems.
- NOT supported on AlphaServer 1000 systems

2.3.3.5 PBXGI-AD

- No Restriction on AlphaServer 800
- Restricted to Primary PCI Bus slots for all AlphaServer 1000A systems
- NOT supported on all AlphaServer 1000 Systems

2.3.4 Operating System Specific Restrictions

2.3.4.1 DSSI Devices Not Seen Under OpenVMS

The following anomaly is OpenVMS specific and is noted here for informational purposes. A new OpenVMS driver may be needed for AlphaServer Systems with KFESA's [DSSI to EISA Storage Adapters]. The symptom is that data-disks off the KFESA may not be seen nor displayed by the OpenVMS "show device" command. The OpenVMS driver, who fixes this anomaly, is available from TIMA.

2.3.4.2 EISA Configuration Utility Diskette Version 1.10 Under Tru64 Unix

When you run ECU V1.10, the VGA Graphics Controller setting is set to DISABLED. Previous ECU versions, this setting was set to ENABLED. When running ECU V1.10, select STEP 3 to ENABLE the VGA Graphics controller prior to booting Digital UNIX. This will allow your Xserver to start. This not apply to Digital AlphaServer 1000 and 1000A Systems using the Cirrus VGA graphics controller on the motherboard.

ECU V1.11A is available. Part number: **AK-Q2CRM-CA** *for OpenVMS/Tru64 Unix*, and **AK-QF1GF-CA** *for WindowsNT systems.*

2.4 Special and General SRM Console Commands

2.4.1 Default Value for bus_probe_algorithm

For all systems, the default value is "**new**" for the SRM console environment variable **bus_probe_algorithm.** The operating systems include Tru64 Unix, (OpenVMS V6.2 and later), and Windows NT.

2.4.2 Set Console to Graphics or Serial

Use the INIT command to redirect the console output to the graphics port or to the serial port. The command sequence is as follows:

>>> set console graphics or >>> set console serial
>>> INIT

After the INIT command , console output is directed to the appropriate port

2.4.3 Using the TEST Command on Shared SCSI systems

The TEST command is designed for stand-alone systems, therefore, will not work on a shared SCSI system. To run the TEST command, disconnect one of the systems to the shared disks.

2.4.4 Clear Secure Mode

The Halt button now is latched in software. If the halt button is depressed when the console is starting, no nvram scripts are executed and the console returns >>>. If secure mode is set, you can clear the console in the following way:

- Type *login* at the SRM >>> prompt
- Press and Release the HALT Button after you see the enter password prompt
- password is now cleared after you release the HALT Button on the operators control panel

2.4.5 Save_NVRAM & Restore_NVRAM Commands

The save_NVRAM and restore_NVRAM commands are available only under the Loadable Firmware Utility [LFU]. The commands save or restore NVRAM configuration data. This feature is useful if upgrading a system's motherboard and you wish to restore the systems previous NVRAM contents. To get to the LFU-prompt to invoke these commands, boot the Alpha Firmware CD and press the enter-key after the Bootfile: prompt.

2.4.5.1 Save_NVRAM

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**}]

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 savedin file srmnvram.sav.
toy : TOY console data in the 50 bytes of TOY RAM is saved in file toynvram.sav.

Example to copy a script from floppy: (Note this command is unnecessary when running from the LFU)

>>> cat fat:savenvr.txt/dva0 > save_nvram

Example: 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" 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.
>>> End of Example

2.4.5.2 Restore_NVRAM

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**}]

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 savedin file srmnvram.sav.
toy : TOY console data in the 50 bytes of TOY RAM is saved in file toynvram.sav.

2.4.6 Redirect Console Output to Floppy Disk

This command was introduced in console v4.8. You can Redirect console output to a FAT-formatted floppy disk and display the contents of the file saved on floppy disk.

Example to Redirect Console Output to Floppy disk:
Format: >>> console-command > fat:filename/dva0

This example stores the systems configuration to a floppy file:
>>> show config > fat:showconfig.fat/dva0

This example displays the contents of console output file stored on floppy disk.
>>> cat fat:showconfig.fat/dva0 | more

This example stores the system power-up sequence:

>>> cat el > x
>>> cat x > fat:cat_el.fat/dva0

This example combines the above two commands into one:

>>> cat el > fat:cat_el.fat/dva0

End of Examples

3 Firmware Update Procedure

This chapter explains how to update firmware. AlphaServer systems contain flash ROM(s) to store SRM and ARC/AlphaBIOS console firmware. SRM console is used for Tru64 Unix and OpenVMS, whereas, ARC/AlphaBIOS console is used for the WindowsNT operating system.

3.1 General Assumptions on Firmware Revision

AlphaServer systems recently shipped may have a higher firmware revision than the firmware revision listed in this release. *Do not load firmware that is older than what is presently installed.* A higher firmware revision usually indicates support for the currently shipping operating system. The revision number of console firmware and the Alpha Firmware CD are mutually exclusive.

3.2 Loadable Firmware Utility Commands

The Loadable Firmware Utility is the mechanism to update console and option firmware.

3.2.1 List Command

Use the list command to show a list of memory-loaded images and currently supported flash ROMs. In the following example three devices are installed in a system that can be firmware-updated.

UPD> list

Device	Current Revision	Filename	Update Revision	
ARC	4.49	arc_fw	4.52	
SRM	v4.7-163	srm_fw	4.7-169	
….		fwb0	2.46	
. ...		dfpaa_fw	2.46	
… …		dfxaa_fw	2.46	see note below on dfxaa_fw
…		dfeab_fw	2.46	
…		kzpsa_fw	A11	

Options DEFEA and the DEPAA use the dfxaa_fw firmware file. Option firmware dfxaa_fw is an encapsulation for older and new versions of the DEFEA and DFPAA. Older DEFEA models part number: 54-21497-XX] use different firmware newer DEFEA models [part number: 54-21503-xx].

3.2.2 Update Command

Use the update command to update console and option firmware or to update option-only firmware.
UPD> update [updates console and option firmware]
UPD> update <option-name> e.g. >>> update ccmab02

3.3 Update Firmware via SRM Console

The following procedure shows how to update console and option firmware. To update only option firmware, select the option name after the update command e.g. UPD> update pka0.

Insert Firmware CD into drive	>>> show device	Find the CD-ROM device ID e.g. dka400
Boot the Alpha Firmware CD	>>> Boot dka400	Boot code determines the AlphaServer type
Press the enter- key after Bootfile	Bootfile:	To use default firmware
Type update	UPD> update	Update console and option firmware
Exit the LFU	UPD>exit	Exiting will initialize the system

Example:

>>> show device
dka400.1.0.1.0 DKA400 RRD43 1084

>>> **boot dka400** (Firmware CD is inserted in CD Drive)

block 0 of dka400.1.0.1.0 is a valid boot block reading 989 blocks from dka400.5.0.1000.0
bootstrap code read in base = 156000, image_start = 0, image_bytes = 7ba00
initializing HWRPB at 2000
initializing page table at 148000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

[Release notes are displayed]

Bootfile: [press enter-key]

eb.....ea.e9.e8.e7.e6.

Checking dba500.5.0.1000.0 for the option firmware files…

***** 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,update rev
Update Replaces current firmware with loadable data image.
Verify Compares loadable and hardware images.
? or Help Scrolls this function table.

UPD> UPDATE …

answer Yes to all questions then exit

UPD> exit

End of Example

The firmware is now loaded into ROM. Typing exit will reset the AlphaServer system which invokes the new firmware.

3.4 Update Firmware via ARC/AlphaBIOS

The following procedures show how to update console and option firmware. To update only option firmware, select the option name after the update command e.g. UPD> update pka0.

To get to the ARC or AlphaBIOS console menu from Windows NT, shutdown the operating system then reset the system. To get to the ARC console from the SRM console prompt >>> , type "***set os_type NT***" then reset the system or type >>> ***arc*** from the SRM console.

Insert Alpha Firmware CD into CD-ROM drive	
Select "Supplementary Menu"	to get to the “Install New Firmware” menu item
Select "Install New Firmware"	to invoke the LFU from the Alpha Firmware CD. This selection wills timeout if the Alpha Firmware CD is not

	present.
Type "***update***" after the UPD> prompt	to update console and option firmware
Type "***exit***" after the firmware has updated	to reset the system

3.4.1 CPU_Upgrade (AlphaServer 1000/1000A 4/xxx Only)

This command provides the ability to upgrade to EV5 CPU by only changing the console firmware. This command does not exist on other systems. Make sure you have an EV5 CPU ready to replace the EV4 CPU before you begin. You must run the EISA Configuration Utility after you have replaced the CPU module.

Procedure:

UPD> cpu_upgrade Answer Yes to all questions
UPD> exit

Shutdown System
Replace CPU
Powerup
Run ECU

End of Procedure

3.4.2 CPU_Downgrade (AlphaServer 1000 5/xxx with MLB 54-23499-01 Only)

The cpu_downgrade command is valid ONLY for AlphaServer 1000 5/xxx and 1000A 5/xxx systems that have the older Main Logic Board 54-23499-01. **Do not use this command on systems with Main Logic Board 54-23499-02**.

This command provides the ability to upgrade to EV5 CPU by only changing the console firmware. This command does not exist on other systems. Make sure you have an EV4 CPU ready to replace the EV5 CPU before you being. You must run the EISA Configuration Utility after you have replaced the CPU module.

Procedure:

UPD> cpu_downgrade Answer Yes to all questions
UPD> exit

Shutdown System
Replace CPU
Powerup
Run ECU

End of Procedure

4 DE500 Notes

4.1 DE500-FA

The DE500-FA supports the following modes. Use the console command shown below to select the appropriate mode.

- 100BaseFx half and full duplex - >>> set ew*0_mode *fast* or *fastfd*

The DE500-FA does not support auto-negotiation mode. V5.1 is the minimum supporting console version.

4.2 DE500-BA and DE500-AA

The DE500-BA and DE500-AA support the following modes: Use the console command shown below to select the appropriate mode.

- 10BaseT half-duplex, full duplex- >>> set ew*0_mode *twisted or full*
- 100BaseTx half-duplex or full duplex - >>> set ew*0_mode *fast* or *fastfd*
- auto-negotiation - >>> set ew*0_mode *auto-negotiation*

V4.7 and V4.9 is the minimum supporting console versions for DE500-AA and –BA respectively.

4.2.1.1 What is Auto-Negotiation

Auto-negotiation is a mechanism to advertise, to detect, and to negotiate line speed abilities to an auto-negotiate-supported device on an Ethernet wire. In auto-negotiation mode, the user does not need to know the line speed of the auto-negotiation-supported device on the other end of an Ethernet wire. In this mode, the DE500-AA or -BA advertises its abilities sending a link code word on the Ethernet wire. The DE500 will default to 100BaseTX full-duplex mode if it does not receive a proper link code word from another auto-negotiation supported device

5 Changes from Previous Console Firmware Releases

5.1 V5.3

- AlphaBIOS Console V5.66 - V5.66 identifies the System Type of a Digital Server 3300 as an AlphaServer Family. This is fixed in next AlphaBIOS release (V5.68 or greater).
- ARC Console V4.57 – 1) Microsoft required that firmware understand years up to 2035 for Y2K certification. We have changed maximum year to 2050. 2) the number of parameters that can be passed to an arcapp was increased from 8 to 16, and parameter checking was added to ensure that this limit is not exceeded
- ISP1020/1040 firmware V5.57 – 1)Fix bug checking user flags set by the SXP firmware when an Interrupt is pending from the SXP to the RISC. The user flags register was latched when the interrupt was set and any new user flag bits are in the second rank of register. Testing the bit tests the value in the latch but not the flags set in the second rank. 2) Fix bug in the routine Process_WDTR_Msg where the target would never went to Message Out phase and subsequently never went to the Message Out Handler where it would send the number of message bytes. If the CDB has not been sent to the target, we need to command the SXP to set attention so that the target goes to Message Out phase.
- KZPCM-DA **PCI Bus slot restriction removed** for AlphaServer 800/Digital Server 3300 platforms
- SRM Console Changes – **1**) Device recognition of the PBXDP-AB and PBXDP-AC multi-port sync. Controller and for the DEGPA-SA Gigabit Ethernet Adapter **2**) Sparce Space expanded to 496Mb - EV5 platforms only **3**)SRM Console Environment Variable *pka0_soft_term* is no longer supports "diff" mode

5.2 V5.2

- ISP1020/1040 Firmware V5.54 -This version of ISP1020 fixes a problem with a tape drive used only *by Computer Special Systems*. V5.54 addresses the problem of improper speed negotiation with a very slow SCSI device.
- Console support for the PCI-to-Cardbus Adapter
- Console recognition of the PBXDA-AA/AB/AC and the SN-PBXNP-AA/AC adapters

5.3 V5.1

- ISP1020 firmware - V5.53
- AlphaBIOS V5.64, ARC console V4.56
- SRM Console Changes – Support for DE500-FA - 100Mb/s MultiFiber Fast EtherWorks Adapter **2**) Fix TGA8 problem that causes ARC machines to boot with colors) **3**) Support for PBXDA-AC - 16 port high performance asynchronous multiplexer controller (see restrictions) **4**) Support for PBXGI-AD - PowerStorm Advanced 3D Graphics Accelerator (see restrictions) **5**) Support for CCMAB-AA - Memory Channel 2 Adapter **6**) Support for DigitalServer 3000 Systems

5.4 V5.0

- New revision of ISP1020 firmware – V5.57 – which supports UltraSCSI devices

5.5 V4.9

- SRM Changes – 1) PCI slot restriction for the KZPBA-DB on AlphaServer 1000A **2**) FRU Table support for AlphaServer 800 systems **3**) Support for DE500-BA Adapter **4**) Latent console support for OpenVMS and DIGITAL UNIX to change console password **5**) Support to "silently update" console firmware **6**) Change

ISP1020 and NCR810 display strings **7**) Update EV5 revision table **8**) Fix TGA8 problem that causes ARC machines to boot with colors

- New ARC console V4.54

5.6 V4.8

- Console support for AlphaServer 800 Systems
- New options firmware for the DEFPA (EISA-to_FDDI) I/O adapter
- ARC Console V4.52
- SRM Console Changes – 1) New LFU commands to save or restore NVRAM data to a FAT-formatted floppy diskette, and the ability to redirect console output to a FAT-formatted. 2) V4 PALcode updates to support Environment Mgmt Monitoring. 3) Enhancements to KFESA and KFESB drivers 4) Boot_reset fix to V4.7 console 5) SMM/LURT register updated for AlphaServer 1000A 4/233 systems 6) Updated ISP driver to support the ISP1040B SCSI Processor

5.7 V4.7

- SRM Changes – 1) Support of the V4.0 FRU table in the HWRPB **2**) Enabled AlphaServer 1000A Environmental Monitoring **3**) Power, fan, and temperature failure detection/reporting are supported in UNIX PALcode and later supported OpenVMS. On 1000A - available when the environmental monitoring jumper is enabled. On powerup, environment interrupts are probed to see if any are pending, and reported **4)** LFU CPU_UPGRADE script cpu_upgrade – Only for EV4 to EV5 systems upgrades. **5)** LFU script *cpu_downgrade* – Only for EV5 to EV4 systems upgrades. **6**) BOOT_RESET environment variable Is now referenced to modify the boot behavior on command line initiated boots and on forced OS reboots. If BOOT_RESET is "ON", then the system is reset prior to boot. By default BOOT_RESET is "**OFF**" **7**) Added COM port environment variables **8**) SCSI drivers updated for tape boot **9**) PALcode fix for REMQTIQ (V1.19 PAL). **10**) Proper PCI Emulex module device recognition. **11**) Change COM1_BAUD rate from OS with out masking interrupts. 12) FRU table fixes for DECevent memory descriptor. **13**) Remove additional PCI FRU entries. **14**) Support for the DE500-AA Fast EtherWorks Adapter **15**) support for the Japanese Keyboard

5.8 V4.6

- SRM Changes – 1) Support for Digital Unix V3.2F and V3.2G, and V4.0A 2) for OpenVMS V6.2-1H1. 3) Support for PowerStorm Graphics (TGA2) (8- and 24-plane). Must be in VGA mode. **4**) Console recognition of the DIGITAL ATMWorks 350, Emulex PCI Sync, Thomas Conrad Token Ring, PowerStorm, and Systech Ethernet Plex. **5**) Power, fan, and temperature failure detection/reporting enhancements in UNIX PALcode only. SRM recognize and enable environment features or disable is set on powerup. On powerup environment interrupts are probed to see if any are pending. Executed during the e4 countdown sequence of the SRM. **6**) New way to probe PCI bus, powerup display is different. **7**) Changed memory display in the show config command and the in show memory command. These commands display the SIMM size of the bank. **8**) A one time diagnostic script is run on the powerup path on EV5 based systems. **9**) EV5 platforms - SROM passes to the SRM console failing memory SIMM information, which is logged to the screen and to the event log. Also logged when you have a mismatch of SIMM sizes. This information is displayed on the console and logged to the event log (el). **10)**HALT button now is latched in software. If the halt button is depressed when the console is starting, no nvram scripts are executed and the console returns >>>. If secure mode is set, you can clear the console in the following way: **11**) Login, at the enter password prompt, depress and release the halt button and then hit return. The password is now cleared.

12) EV5 - environment variable full_powerup_diags disables the test script on powerup, default is ON. **13**) EV4 to EV5 systems upgrades - script in the update utility cpu_upgrade, which upgrades the system to EV5 SRM EV5 firmware from CD a floppy.**14**) EV5 to EV4 systems downgrades - script in the update utility called cpu_downgrade, which downgrades the console to EV4 CD or floppy. **15**) EV5 - test script is called sys_exer, not test. **16**) TGA uses the blue screen, jumpscroll and cursor in the top left. Also the backing store is turned on to re-paints the screen on console re-entry.

5.9 V4.5

- AlphaServer 1000 Model 4/xxx Model 5/xxx Systems – 1) Updating the AlphaBIOS 5.13 using the LFU update utility causes a system hang. The workaround is to set the os_type under AlphaBIOS to VMS or UNIX, initialize the system, and then use the LFU update utility under the SRM. 2) Fixed problem of KZPSC with 16MB/32MB cache 3)Fixed incorrect speed display problem in the 'show config' command output

- AlphaServer 1000A Model 4/xxx and Model 5/xxx Systems – 1)Model 4/xxx now supports up to seven TGA1s at the console level 2) Fixed HALT button problem under UNIX PALcode 3) Restriction - restriction is that system from the console does not display devices connected to a KZPSC on the secondary bus.