DIGITAL AlphaStation 400

V7.2 Firmware Update Procedures And Release Notes

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1 Introduction

This guide is intended for users of the **DIGITAL AlphaStation 400**.

It describes how to update the system's console firmware and I/O adapter firmware, using the firmware update utilities. It also provides release notes pertaining to the new firmware revisions.

1.1 Firmware and Operating System Revision Matrix

The following tables show the compatibility between the firmware revisions and revisions of OpenVMS, Tru64 UNIX, and Windows NT.

Table 1 AlphaStation 400 - SRM Compatible

SRM Console	OpenVMS	DIGITAL/Tru64 UNIX
X5.0-30	6.2	3,2c
X5.2-30	6.2, 6.2-1h1, 7.0	3.2c
X6.0-943	6.2, 6.2-1h1, 6.2-1h2, 7.0	3.2c, 3.2d, 4.0
V6.1-2	6.2, 6.2-1h1, 6.2-1h2, 6.2-1h3, 7.0	3.2c, 3.2d, 4.0
V6.2-2	6.2, 6.2-1h1, 6.2-1h2, 6.2-1h3, 7.0	3.2c, 3.2d, 4.0
V6.3-4	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V6.4	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V6.5	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V6.6	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V6.7	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V6.8	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V6.9	6.2-1h2, 6.2-1h3, 7.0, 7.1	3.2c, 4.0x
V7.0	6.2-1h2, 6.2-1h3, 7.0, 7.1, 7.2	3.2c, 4.0x
V7.1	6.2-1h2, 6.2-1h3, 7.0, 7.1-x, 7.2-x	3.2c, 4.0x, 5.0x
V7.2	6.2-1h2, 6.2-1h3, 7.0, 7.1-x, 7.2-x	3.2c, 4.0x, 5.0x

Table 2 AlphaStation 400 - ARC Compatible

ARC Firmware	Windows NT
4.45	3.51
4.49	3.51, 4.0
4.53	3.51, 4.0
4.56	3.51, 4.0
4.57	3.51, 4.0
4.58	3.51, 4.0

1.2 Associated Documentation

You can find additional information about installing, configuring and booting your DIGITAL AlphaStation 400 in the associated documentation listed in the following table :

Table 3 Associated Documentation

Title	Part Number
AlphaStation 400 Series User Information	EK-PCDSA-UI
AlphaStation 400 Series CPU Module Information	EK-PCDSA-CI
AlphaStation 400 Series Installation Information	EK-PCDSA-II
AlphaStation 200/400 Series Technical Information	EK-PCDSA-TI
AlphaStation 400 Series Service Information	EK-PCDSA-OI

2 DIGITAL AlphaStation 400 Console Release Notes

2.1 Console Firmware Components – Revision Information

The latest Firmware Update Bootfile "AS400_V72_1.EXE" on the Alpha Systems Firmware Update CD V5.7, contains the SRM Console V7.2-1. The firmware package for this release has the following components (* = CHANGED since V7.1 release of Firmware) :

Table 4 Console V7.2 Firmware Components and Revisions

Component	Revision Information
APU	7.2 *
SRM Console	7.2-1 *
ARC Firmware	4.58
PCI Update Utility	7.2 *
BIOS (SRM)	1.15a
BIOS (ARC)	2.02
VMS PALcode	5.56-2
UNIX PALcode	1.46-2

2.2 Console Enhancements and New Features

The following are enhancements and new features contained in the DIGITAL AlphaStation 400 console firmware in this release :

- Do boot reset for all boots if boot_reset EV set to ON
- Added date to “show config” console firmware display
- Changed Ethernet driver for the onboard 21143 chip to fix auto-negotiation.
- Improved driver startup/shutdown to only start the driver being used when booting.
- Fixed auto-negotiate satellite booting problem.
- Fixed problem with double MOP trigger boot with Phase 5 DECNet.
- Changed MOP trigger boot for boot_reset.
- Removed use of console password for MOP trigger boot.
- Fixed Inconsistent boot driver state error after boot reset.

- Added halt reprompt to get prompt when trigger boot and shutdown.
- Added new Environment Variables (EVs) for MOP trigger booting :

```
mop_password - default is 00-00000000-00000000
                          --    --       --
                          |     |        | - Verification lo
                          |     |- verification hi
                          |- processor to boot (system)


mop_version  - default is 1 (pre Phase 5 DecNet)
             - 4 is for Phase 5 DecNet


mop_debug    - default is OFF, ON is display Trigger
               boot messages.
```

"mop_password" sets the MOP boot message password for the network ports. This password should be entered in hexadecimal in the form "01-longword-longword". For instance, "01-01234567-89abcdef". The leading byte should normally be "01" when enabled (why - precedent from VAX consoles that had SGEC or TGEC network chips). The default setting is "00-00000000-00000000". The verification field used when requesting a trigger boot from the system side would then be "%x0123456789abcdef".

"mop_version" indicates what version of the MOP trigger message to accept. The other one is then ignored. For now this can be either a 1 or a 4.

- Added Pause Screen capability to capture screen output that is more than a page long.

The following message will be displayed when the screen pauses in page mode:

```
--More-- (SPACE - next page, ENTER - next line, PAUSE - wait)  30
```

In addition to the described keys above:

Control-C or Control-D will also give next page.

0 will turn off page mode for the remainder of this output.

The PAUSE key will set the wait time to 30 minutes, instead of the 30 seconds shown above.

- Added new EVs for Pause Screen control :

  For graphics terminal -

  graphics_page - set to page size of graphics
  - default is 0 lines, off.

  graphics_type - default is “video”, “hardcopy” turns off
  wait time display in page mode.

  For serial line terminal -

  tta0_page - set to page size of terminal screen,
  default is 0 lines, off.

  tta0_type - default is “video”, “hardcopy” turns off
  wait time display in page mode.

- Added FORE ATM adapters to console recognition.
- Fixed printout of PAL version.
- Improved Console Banner.
- Added ELSA_VGA reset.

3 DIGITAL AlphaStation 400 Firmware Update Procedures

This chapter explains how to upgrade the AlphaStation 400 firmware. Consult the appropriate section for system information, depending on whether you are running Tru64 UNIX, OpenVMS, or the Windows NT Operating System.

The AlphaStation 400 system contains four flash ROMs, two with ARC firmware for the Windows NT operating system and two with SRM Console firmware for the OpenVMS and Digital/Tru64 UNIX operating systems.

NOTE: Before you can update your system firmware, the flash ROM enable jumper must be in the write-enabled position. This is the default position. See the AlphaStation 400 Series User Information document for details.

3.1 Updating Console Firmware Using the CD

3.1.1 Tru64 UNIX and Open VMS Users

NOTE: In the following example, the "console" environment variable is set to "serial" mode. In "graphics" mode, the printout varies slightly.

1. Load the "Alpha Systems Firmware Update CD" into the CD-ROM Drive. Then, from the SRM Console prompt, Initialize the System :

```
>>>init
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.ea.e9.e8.e7.e6.....e5.
AlphaStation 400 4/233 Console V7.1-2
  built on Nov 17 1999 at 10:20:07
>>>
```

2. Enter (show device) to find name of CD-ROM Drive (dka400 in this example) :

```
>>>show device
dka0.0.0.6.0             DKA0                          RZ26L  442D
dka100.1.0.6.0           DKA100                        RZ26L  442D
dka400.4.0.6.0           DKA400                        RRD43  1084
dva0.0.0.0.1             DVA0
ewa0.0.0.12.0            EWA0              08-00-2B-E4-9D-9E
pka0.7.0.6.0             PKA0                  SCSI Bus ID 7
>>>
```

3. Enter (boot) command as shown, using the above CD Drive name, and answer "no" to the "platform type" question :

```
>>>b dka400
(boot dka400.4.0.6.0 -flags A)
block 0 of dka400.4.0.6.0 is a valid boot block
reading 1082 blocks from dka400.4.0.6.0
bootstrap code read in
base = 1f2000, image_start = 0, image_bytes = 87400
initializing HWRPB at 2000
```

```
initializing page table at 1e4000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

The current platform type is "AlphaStation 400".
Is this really an "AlphaServer 400"?  [y/n]  no
```

4. The system will respond by displaying "READ ME FIRST" information on the screen (which you should read and scroll through by pressing the ENTER key), followed by display of the default firmware update utility bootfile name, and the prompt "Bootfile:" At this point, you may press the RETURN or ENTER key to load the latest (current) update, or you may type a specific bootfile name to load a previous (older) version.

```
The default bootfile for this platform is

        [ALPHA400]AS400_V72_1.EXE

Hit <RETURN> at the prompt to use the default bootfile.

Bootfile: <USER HITS ENTER KEY>
    .
    .
<Printout Occurs Here>
    .
    .
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.ea.e9.e8.e7.....e5.
V7.0-10, built on Apr 15 1999 at 16:47:18
>>>(boot pmem:180000 -flags unit=1)
bootstrap code read in
base = 180000, image_start = 0, image_bytes = 800000
initializing HWRPB at 2000
initializing page table at 7fc000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

       ***  AlphaStation 400 4/233 -- Firmware Update   ***

       Use HELP or ? for help

Update
Verify
List
Show
DEbug
NDebug
?
Apu->
```

5. Enter (update) command as shown, and answer yes to the question (note - the update may take a minute or so - DO NOT ABORT THE PROGRAM):

```
Apu-> update
APU-I ARE YOU READY TO PROGRAM (SRM  ) ROM DEVICE ? (Y/N) y
APU-I PRECHARGING (SRM  ) ROM DEVICE
APU-I ERASING (SRM  ) ROM DEVICE
APU-I PROGRAMMING (SRM  ) ROM DEVICE
APU-I VERIFY LOADED (SRM  ) ROM IMAGE
APU-I VERIFY LOADED (SRM  ) ROM IMAGE DONE
APU-I PROGRAMMING (SRM  ) ROM COMPLETED
APU-I PRECHARGING (ARC  /AlphaBIOS) ROM DEVICE
APU-I ERASING (ARC  /AlphaBIOS) ROM DEVICE
```

```
APU-I PROGRAMMING (ARC  /AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC  /AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC  /AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC  /AlphaBIOS) ROM COMPLETED
Apu->
```

6. **Enter (exit) command .**

```
Apu-> exit
...Please Cycle System Power ...
```

7. **Turn system power OFF and back ON.**

```
<USER CYCLES THE POWER>

ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.ea.e9.e8.e7.e6.....e5.
AlphaStation 400 4/233
Console V7.2-1 Mar  6 2000 14:46:15
>>>
```

3.1.2 Windows NT Users

To run the firmware update utility from CD, perform the following steps:

1. Shutdown Windows NT and restart the system.
2. Insert the Firmware CD into the CD-ROM Drive.
3. Select the “Supplementary Menu” (this is the last choice in the Boot Menu).
4. Select “Install New Firmware”
5. After the APU Update Program starts, follow the instructions from the previous section, beginning at **STEP 5**.

3.2 Updating I/O Adapter Firmware

1. Follow the Instructions in Steps 1-4 of section 3.1.1 to boot the firmware CD, etc., until you get to the “bootfile” prompt. At that point, enter the filename [alpha400]as400_pci_vx_x.exe, where vx_x is the particular version of the I/O adapter update utility (LFU) on the current CD :

```
Bootfile: [alpha400]as400_pci_v7_2.exe
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.ea.e9.e8.e7.e6.....e5.
AlphaStation 400 4/233
Console V7.2-1 Mar  6 2000 13:34:29


If you want to load the options firmware,
please enter the device on which the files are located(dka0,dva0,ewa0),
or just hit <return> to proceed with a standard console update: dka400
Please enter the name of the options firmware files list, or
Hit <return> to use the default filename (as400fw.txt)  :
Copying as400fw.txt from dka400. . .
Copying DFXAA320 from dka400 to dfxaa_fw. . .
```

```
Copying KZPSAA12 from dka400 to kzpsa_fw. . .

                ***** 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.
------------------------------------------------------------------------------

UPD>
```

2. Enter (list) command to observe old and new firmware revisions.

```
UPD> list

Device         Current Revision    Filename            Update Revision

                                   dfxaa_fw                3.20

pkb0             A11               kzpsa_fw              A12

UPD>
```

3. Enter (update) command to update firmware. (In this example the kzpsa is the only updateable adapter present. If no updateable adapters are present, the message "not supported under LFU" will appear).

```
UPD> update

Confirm update on:
pkb0
[Y/(N)]y
WARNING: updates may take several minutes to complete for each device.

                          DO NOT ABORT!

pkb0            Updating to A12...  Verifying A12...  PASSED.

UPD>
```

4. Enter (exit) command .

```
UPD> exit
Please reset the system......
```

5. Turn system power OFF and back ON.

```
<USER CYCLES THE POWER>

ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.ea.e9.e8.e7.e6.....e5.
AlphaStation 400 4/233
Console V7.2-1 Mar  6 2000 14:46:15
>>>
```

3.3 Preparing a Firmware Update Floppy Diskette

Console Firmware can also be updated by using a floppy diskette. There are several ways to prepare a firmware update floppy diskette, and these are detailed in the following sections. You can build the floppy using firmware update utility images obtained from the firmware CD or from the Web at : ftp://ftp.digital.com/pub/Digital/Alpha/firmware/readme.html

3.3.1 Windows NT Users

1. Copy the firmware update utility image to a FAT-formatted floppy, and rename the file to **fwupdate.exe** on the floppy.
2. Shutdown Windows NT and restart the system.
3. Insert the floppy into the floppy drive.
4. Select the "Supplementary Menu" (this is the last choice in the Boot Menu).
5. Select "Install New Firmware"
6. After the APU Update Program starts, follow the instructions in Section 3.1.1, beginning at **STEP 5**.

3.3.2 Tru64 UNIX Users

To make an SRM Console-bootable floppy on a UNIX system, perform the following:

1. Make sure you have a blank low-level-formatted floppy. For example, to format a floppy in drive zero :
   # fddisk –fmt /dev/rfd0a
2. Download the file **mkbootfirm.tar** from ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/ .
3. Untar the mkbootfirm.tar file as follows:

   # tar xvf mkbootfirm.tar

   (Please note that this creates a sub-directory named **mkbootfirm**)
4. Copy the firmware update utility image to the sub-directory **mkbootfirm**, and rename the file to **fwupdate.exe** .
5. Change the working directory to the sub-directory **mkbootfirm**, and run **mkbootfirm** on the firmware image that you downloaded :

   # cd mkbootfirm
   # ./mkbootfirm fwupdate.exe | dd of=/dev/rfd0c bs=64k
6. Insert the floppy on the target system and boot it from the SRM console :

>>> **boot dva0**

3.3.3 OpenVMS Users

To make an SRM Console-bootable floppy on an OpenVMS system, perform the following:

1. Copy the firmware update utility image to your system, and rename the file to **fwupdate.exe**.

2. Enter the following VMS commands to make a bootable floppy (where the floppy is dva0) :

```
$ set  file/attr=(rfm:fix,lrl:512,mrs:512,rat:none)  fwupdate.exe
$ init/dens=hd/index=begin  dva0:  fwupdate
$ mount  dva0:  fwupdate
$ create/dir  dva0:[alpha400]
$ copy/contig  fwupdate.exe  dva0:[alpha400]
$ mcr  writeboot
no
yes
dva0:[alpha400]fwupdate.exe
$ dismount  dva0:
```

3. Insert the floppy on the target system and boot it from the SRM console :

   >>> **boot dva0**

3.3.4 DOS/Windows Users

To make an SRM Console-bootable floppy on an Intel-based DOS/Windows system, perform the following:

1. Copy the firmware update utility image to your system, and rename the file to **fwupdate.exe**.

2. Download the file **mkboot.exe** from ftp://ftp.digital.com/pub/Digital/Alpha/firmware/utilities/ , and place it in the same folder as the update image (such as **c:\tmp**)

3. From a DOS window, run the mkboot program as follows :

   C:\tmp> mkboot fwupdate.exe

4. Insert the floppy on the target system and boot it from the SRM console :

   >>> **boot dva0**