DIGITAL Personal Workstation *a/au-Series*

V7.2 Firmware Update Procedures And Release Notes

March 2000

Compaq Computer Corporation
Marlborough, Massachusetts

First Printing, March 1997
Revised, August 1997
Revised, January 1998
Revised, June 1998
Revised, September 1998
Revised, March 1999
Revised, November 1999
Revised, March 2000

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1 Introduction

This guide is intended for users of the **DIGITAL Personal Workstation a/au-Series**.

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 table shows the compatibility between the firmware revisions and revisions of Windows NT and Tru64 UNIX.

Table 1 DIGITAL Personal Workstation FW/SW Revision Matrix

SRM Console	AlphaBIOS FW	OpenVMS	Tru64 UNIX	Windows NT
V7.2-1	V5.70	V7.2-x	V4.0x, V5.0x	V4.0

1.2 Associated Documentation

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

Table 2 Associated Documentation

Title	Part Number
DIGITAL Personal Workstation User Information	EK-ALMIA-UI
DIGITAL Personal Workstation Quick Setup Guide	ER-B30WW-IM

2 DIGITAL Personal Workstation a/au-Series Console Release Notes

2.1 Console Firmware Components – Revision Information

The latest Firmware Update Bootfile "DIGITALPW_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 DIGITAL Personal Workstation Firmware) :

Table 3 Console V7.2 Firmware Components and Revisions

Component	Revision Information
SRM Console	7.2-1 *
AlphaBIOS	5.70
PCI Update Utility	7.2 *
VMS PALcode	1.20-16
UNIX PALcode	1.22-18
ISP10x0 FW	5.57
SROM	5.90

2.2 I/O Adapter Firmware Revisions

The I/O Adapter Update Utility (DIGITALPW_PCI_V7_2.EXE) on the V5.7 Firmware CD contains the following I/O Adapter Firmware Revisions (* = CHANGED since last release) :

Table 4 I/O Adapter Firmware Revisions

Adapter	HW Revision	Firmware Revision
KZPSA	All revs	A12
DEFPA	All revs	3.20 *

2.3 Console Enhancements and New Features

The following are enhancements and new features contained in the DIGITAL Personal Workstation 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.
- Remove KGPSA Fibre Channel driver (should not have been in this platform build).
- Fixed auto-negotiate satellite booting problem.
- Fixed vga_reinit 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 Personal Workstation Firmware Update Procedures

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

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.CPU 0 Speed is 1.67 ns (599MHz)

ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
Digital Personal Workstation 600au Console V7.1-3
  built on Nov 16 1999 at 17:49:20
>>>
```

2. Enter (show device) to find name of CD-ROM Drive (dkb0 in this example) :

```
>>>show device
dkb0.0.0.207.0             DKB0        TOSHIBA CD-ROM XM-6302B  1017
dkc0.0.0.1004.0            DKC0                       RZ2CC-KA  5520
dva0.0.0.0.1               DVA0
ewa0.0.0.3.0               EWA0              00-00-F8-76-60-67
pkc0.7.0.1004.0            PKC0                  SCSI Bus ID 7  5.57
pqa0.0.0.107.0             PQA0                       PCI EIDE
pqb0.0.0.207.0             PQB0                       PCI EIDE
>>>
```

3. Enter (boot) command as shown, using the above CD Drive name :

```
>>>boot dkb0
(boot dkb0.0.0.207.0 -flags 0)
block 0 of dkb0.0.0.207.0 is a valid boot block
reading 1082 blocks from dkb0.0.0.207.0
bootstrap code read in
base = 1f0000, image_start = 0, image_bytes = 87400
initializing HWRPB at 2000
initializing page table at 1e2000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

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

        [DIGITALPW]DIGITALPW_V72_1.EXE

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

Bootfile: <USER HITS ENTER KEY>
    .
    .
<SEVERAL LINES OF OUTPUT HERE>
    .
    .
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
 Digital Personal Workstation 600au Console V5.6-1
        built on Sep 24 1999 at 16:25:55
>>>(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 798000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

***  Digital Personal WorkStation 600au -- 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 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 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-I ERASING (SROM ) ROM DEVICE
APU-I PROGRAMMING (SROM ) ROM DEVICE
APU-I VERIFY LOADED (SROM ) ROM IMAGE
APU-I VERIFY LOADED (SROM ) ROM IMAGE DONE
APU-I PROGRAMMING (SROM ) 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.CPU 0 Speed is 1.67 ns (599MHz)

ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
Digital Personal Workstation 600au
Console V7.2-1 Mar  6 2000 14:47:02
>>>
```

3.1.2 Windows NT Users

To start the firmware update utility from CD perform the following steps:

1. Shutdown Windows NT and restart the system.
2. Insert the Firmware Update CD into the CD-ROM drive.
3. While AlphaBIOS is starting press F2 and wait for the setup screen to appear.
4. Select “AlphaBIOS Upgrade…” from the initial Set-up Menu.
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 the to the “bootfile” prompt. At that point, enter the filename [digitalpw]digitalpw_pci_vx_x.exe, where vx_x is the particular version of the I/O adapter update utility (LFU) on the current CD :

```
Bootfile: [digitalpw]digitalpw_pci_v7_2.exe
    .
<Printout Occurs Here>
    .
    .
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.CPU 0 speed is 1.67 ns (599MHz)

ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
Digital Personal Workstation 600au
Console V7.2-1 Mar  6 2000 13:32:06
```

2. Enter the CD Drive Name when prompted for it, and accept the default filename.

```
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: dkb0
```

```
Please enter the name of the options firmware files list, or
Hit <return> to use the default filename (digitalpwfw.txt)  :

Copying digitalpwfw.txt from dkb0. . .
Copying DFXAA320 from dkb0 to dfxaa_fw. . .
image length - 38a00
Copying KZPSAA12 from dkb0 to kzpsa_fw. . .
image length - 74000


                ***** 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>
```

3. **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>
```

4. **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>
```

5. **Enter (exit) command .**

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

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

```
<USER CYCLES THE POWER>

ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.CPU 0 speed is 1.67 ns (599MHz)
```

```
ef.ee.ed.ec.eb.f4.ea.e9.e8.e7.e6.e5.e4.
Digital Personal Workstation 600au
Console V7.2-1 Mar  6 2000 14:47:02
 >>>
```

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. While running AlphaBIOS Press F2 to invoke the setup utility.

3. Insert the floppy into the floppy drive (make sure no CD is present in the CD drive).

4. Select “AlphaBIOS Upgrade …” (note: the load may take some time, please be patient).

5. Use the “update” command at the APU prompt, as described in previous sections above.

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:[digitalpw]
$ copy/contig  fwupdate.exe  dva0:[digitalpw]
$ mcr  writeboot
no
yes
dva0:[digitalpw]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**