DEC 2000 AXP™ and DECpc AXP Systems

Firmware Update Procedures

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Preface

Purpose of This Guide

This guide is intended for all managers of the DEC 2000 Model 300/500 AXP and DECpc AXP 150 systems.

This guide describes how to update the system's firmware using the loadable Firmware Update Utility.

Conventions

The following conventions are used in this guide:

Convention	Description
RZ2x	RZ2x refers to any of the RZ-series fixed disk drives, including the RZ24L, RZ25, and RZ26.
Return	A key name in a box indicates that you press a named key on the keyboard.
Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key.
`show config`	This typeface denotes commands and command output. Commands are not case-sensitive except where specifically indicated.
italics	Italicized letters indicate a variable value that you must provide. For example, `>>> set` *`variable`* Return
Caution	Cautions provide information to prevent damage to equipment or software.
Warning	Warnings contain information to prevent personal injury.

Firmware and Operating System Revisions

Notes

Systems that have shipped recently may have firmware revisions at a higher level than is in this kit. The higher level firmware revisions support the revisions of the operating systems that are currently shipping. Some files on the CD-ROM are from previous firmware releases. Systems should not be loaded with older firmware than is presently installed.

The system firmware on this CD has a unique revision and is independent of the revision of this firmware kit.

Table 1 shows the compatibility between the firmware revisions and revisions of OpenVMS, DIGITAL UNIX, and Windows NT.

Table 1 DEC 2000 Model 300/500 AXP and DECpc AXP 150

Firmware Rev	OpenVMS	DIGITAL UNIX	Windows NT
1.1	1.5-1H1	Not supported	3.1
1.2	1.5-1H1	1.3B, 2.0	3.1
1.3	6.1	1.3B, 2.0	3.1
1.4	6.1	1.3B, 2.0, 3.0	3.1
1.6	6.1, 6.1-1H1	1.3B, 2.0, 3.0	3.5
1.7	6.1, 6.1-1H1	1.3B, 2.0, 3.0, 3.2	3.5
1.8	6.1, 6.1-1H1, 6.2	1.3B, 2.0, 3.0, 3.2	3.5
1.9	6.1, 6.1-1H1, 6.2	1.3B, 2.0, 3.0, 3.2, 3.2C	3.5, 3.5-1
2.1	6.1, 6.1-1H1, 6.2	1.3B, 2.0, 3.0, 3.2, 3.2C	3.5, 3.5-1
2.2	6.1, 6.1-1H1, 6.2, 7.0	1.3B, 2.0, 3.0, 3.2, 3.2C, 3.2D, 4.0	3.5, 3.5-1

Associated Documentation

These firmware release notes do not describe how to use the console firmware commands nor do they list their error codes. You can find information about these subjects in the associated documentation listed in the following table.

Title	Part Number
DEC 2000 Model 300 AXP Customer Hardware Information Kit	QZ–00E8A–GZ
DEC 2000 Model 300 AXP Maintenance Information Kit	QZ–00EAB–GZ
DEC 2000 Model 500 AXP Customer Hardware Information Kit	QZ–00J8A–GZ
DEC 2000 Model 500 AXP Maintenance Information Kit	QZ–00JAA–GZ

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1

DEC 2000 AXP and DECpc AXP Firmware Update Procedure

This chapter explains how to update the DEC 2000 Model 300/500 AXP and DECpc AXP 150 firmware. Topics are as follows:

- Conducting power-up test
- Upgrading the system from a disk
- EISA configuration and Windows NT boot information

1.1 Firmware Update Steps

Update DEC 2000 AXP and DECpc AXP firmware as described in the following sections.

1.1.1 Step 1: Turn the System On

Press the front rocker switch to the On (|) position. The following information is displayed:

```
Alpha AXP System - ROM Version 2.1
Copyright (c) 1993 Digital Equipment Corporation.

Alpha AXP SRM Firmware Version - 36d
System conducting power up tests
-------------------------------------------------

Devnam            Devstat
------            -------
   CPU            OK EV4 P2.1 6.6ns
   MEM            OK 32MB
   NVR            OK
   SCC            OK
    IT            OK
   KBD            OK
   LPT            OK
   VGA            OK
    NI            OK 08-00-2B-2E-31-18    DE422
  SCSI            OK
-------------------------------------------------
System power up OK.

>>>
```

1.1.2 Step 2: Update Operating System Type

- Before you update the operating system type, display the variable setting.

```
>>> show os_type
OS_TYPE = VMS
```

Note

The os_type depends on the operating system you are using and may be one of the following: VMS, DIGITAL UNIX, and NT.

- Set the operating system environment variable to *flash* to perform the firmware update.

```
>>> set os_type flash
OS_TYPE = FLASH_UPDATE
```

1.1.3 Step 3: Power Cycle the System

To cycle the power on your system, perform the following steps:

1. Press the front rocker switch to the Off (O) position.
2. Press the front rocker switch to the On (|) position.

1.1.4 Step 4: Determine the Device ID of the CD-ROM Drive

At the console prompt (>>>), enter the show device command.

```
>>> show device
 BOOTDEV      ADDR      DEVTYPE    RM/FX    DEVNAM      REV     NUMBYTES
 -------      ----      -------    -----    ------      ---     --------
 ERA0         08-00-2B-2E-31-18
 DVA0         PC Floppy DISK       RM
 SCSI Devices..
 DKA0         A/0/0     DISK       FX       RZ25        0900    426.25MB
 DKA400       A/4/0     RODISK     RM       RRD42       4.5d    ......
 HOST         A/7/0     PROC                AHA1742A    G.2
```

In the example, the CD-ROM drive has a device ID of DKA400.

1.1.5 Step 5: Load the Firmware Update Utility Compact Disc

1. Remove any compact disc that may already be loaded into the CD drive.
2. Load the Firmware Update compact disc into the drive.

1.1.6 Step 6: Boot the Firmware Utility Disk

Boot the system from the update utility disk, using the device ID determined in step 3.

```
 >>> b -fl 0,80 dka400
INIT-S-CPU...
AUDIT_BOOT_STARTS ...
AUDIT_CHECKSUM_GOOD
AUDIT_LOAD_BEGINS
AUDIT_LOAD_DONE
```

```
Bootfile: [dec2000]dec2000_v2_2.exe
*** FIRMWARE UPDATE UTILITY V2.2 ***
*** SYSTEM TYPE: DEC 2000 AXP ***
UPDATE
VERIFY
LIST
SHOW
?
```

1.1.7 Step 7: Update the System

Enter `update` to update the system:

```
UPD-> update
UPDATE SYSTEM ROM DEVICE
UPD-I VERIFY LOADED ROM IMAGE
.....................................................................
.....................................
UPD-I VERIFY LOADED ROM IMAGE DONE
FIRMWARE REVISION: V2.2 LENGTH: 0x100000 -> 1048576 BYTES CHECKSUM: 0x30
MANUFACTURER = AMD (0x01)
DEVICE CODE  = 28F010 (0x20) 128K x 8
UPD-I *** ROM CONTENTS WILL BE DESTROYED ***
UPD-I ARE YOU READY TO PROGRAM DEVICE ? (Y/N ) Y
UPD-I ROM DEVICE BLOCK ERASED AND PROGRAMMED

  0  1  2  3  4  5  6  7  8  9  10  11  12  13  14  15

UPD-I PROGRAMMING COMPLETED
.....................................................................
.....................................................................
.....................................................................
.....................................................................
SYSTEM ROM UPDATE SUCCESSFUL
```

1.1.8 Step 8: Verify the Checksum

Enter the `verify` command to verify that the expected checksum and actual checksum are the same. The following example displays an output for verifying the checksum:

```
UPD-> verify
VERIFY SYSTEM ROM DEVICE
UPD-I VERIFY LOADED ROM IMAGE
.....................................................................
.............................................
UPD-I VERIFY LOADED ROM IMAGE DONE
.....................................................................
.............................................
.....................................................................
.............................................
SYSTEM ROM DEVICE EXPECT CHECKSUM 0x30
SYSTEM ROM DEVICE ACTUAL CHECKSUM 0X30
SYSTEM ROM DEVICE VERIFY SUCCESSFUL
```

1.1.9 Step 9: Exit from the Firmware Update Utility

Enter the `exit` command to leave the update utility:

Note

In the following example, the `os_type` depends on the operating system you are using and may be one of the following: VMS, Digital UNIX, and NT.

```
UPD-> exit

?05 HLT INSTR
PC= 00000000.000004E4 PSL= 00000000.00001F00
>>>set os VMS

OS_TYPE = VMS
>>>
```

1.1.10 Step 10: Set Up the Keyboard

Use the `set keyboard` command to set up the keyboard variant on your system.

Note

Support has been included in this release of the firmware code for additional keyboard variants.

```
>>> set keyboard us

KEYBOARD = US
>>>
```

1.1.11 Step 11: Power Cycle the System

To cycle the power on your system, perform the following steps:

1. Press the front rocker switch to the Off (O) position.
2. Press the front rocker switch to the On (|) position.

   Example:

```
New Configuration Required
Alpha AXP System - ROM Version 2.2.
Copyright (c) 1993 Digital Equipment Corporation.

Alpha AXP SRM Firmware Version - 370
System conducting power up tests
------------------------------------------------------------

Devnam            Devstat
------            -------
   CPU            OK EV4 P2.1 6.6ns
   MEM            OK 32MB
   NVR            OK
   SCC            OK
    IT            OK
   KBD            OK
   LPT            OK
   VGA            OK
    NI            OK 08-00-2B-2E-31-18    DE422
  SCSI            OK
------------------------------------------------------------

System power up OK.
Invoking EISA Config Utility.  Insert System Config floppy. Continue (Y/N)?
```

1.2 EISA Configuration and Windows NT Boot Information

EISA configuration information and Windows NT boot information are held in the flash device. This firmware update has cleared this information.

1.2.1 EISA Configuration

Perform the following commands to set up your system.

- OpenVMS or DIGITAL UNIX users:

  Re-run the EISA Configuration Utility (ECU) before attempting to boot the operating system.

- Windows NT users:

  The default configuration is held within the flash device. All of the options highlighted in the SETUP MENU must be set up. Examples of options are the default environment variables, the default configuration, and running the EISA Configuration Utility from a diskette.

1.2.2 Windows NT Boot Information

Look for Boot information for Windows NT V3.1, in the default directory for the `osloader.exe` file `\os\nt`.

In future releases of the Windows NT operating system (that is, the Daytona release), the default directory for this file will be `\os\winnt`.

For Windows NT users (currently running V3.1 of the operating system) who want to update to V2.2 of the firmware code, look under the MANAGE BOOT SELECTION menu in the NT console, then set up the osloader directory and name as follows:

```
\os\nt\osloader.exe
```

2
Network and InfoServer Upgrades

This chapter explains how to perform network updates:

- MOP network upgrades
- BOOTP network upgrades
- InfoServer upgrades

2.1 MOP Network Upgrade

Note

You can use a DIGITAL UNIX system to copy the file from the Firmware Update Utility CD-ROM, but MOP is not supported under DIGITAL UNIX.

The DEC 2000 AXP system to be updated (target system) must be powered on and at the console prompt (>>>).

Table 2–1 briefly lists the steps required to update the firmware on your DEC 2000 AXP system from the network.

Table 2–1 Updating System Firmware

Step	Description
1	Place the Firmware Update Utility compact disc into the CD drive on the host system.
2a, b	If the host is a VMS, ULTRIX, or DIGITAL UNIX system, copy the update file from the Firmware Update Utility compact disc.
3a	If the host system is a VMS system, create and execute a command file to set service enabled on the host system.
3b	If the host is an ULTRIX system, set up the host system.
4	Enter a network boot command from the target system.
5	Refer to Section 1.1, steps 7-11 to complete update procedure.

To update the operating system type, enter the following command:

```
>>>set os_type flash
```

2.1.1 Step 1: Load the Firmware Update Utility Compact Disc

1. Remove any compact disc that may already be loaded into the CD drive.
2. Load the Firmware Update compact disc into the drive.

2.1.2 Step 2a: VMS File Copy Instructions

If your host system is VMS, copy the file from the Firmware Update Utility compact disc by entering the following commands at the VMS $ prompt.

```
$ mount dka400 update_v53
$ copy dka400:[SYS0.SYSEXE]DEC2000_V2_2.SYS mom$load:
```

2.1.3 Step 2b: ULTRIX or DIGITAL UNIX File Copy Instructions

If your host system is ULTRIX or DIGITAL UNIX, copy the file from the Firmware Update Utility compact disc by entering the following commands at the ULTRIX or DIGITAL UNIX # prompt.

```
# mount -rt cdfs -o noversion /dev/rz4c /mnt
# cp /mnt/DEC2000/DEC2000_V2_2.SYS
```

2.1.4 Step 3a: Set Up VMS Host

Execute the following when updating a DEC 2000 AXP using a VMS host. You must use NCP to define the characteristics of the host and target system. You will need OPER privileges.

```
$ set verify
$ NCP set circ CIRC_NAME state off
$ NCP set circ CIRC_NAME serv enabled
$ NCP set circ CIRC_NAME state on
$ set noverify
```

CIRC_NAME is the logical name of the circuit used by the network.

Note

Be sure to execute the command file.

2.1.5 Step 3b: Set Up ULTRIX Host

1. Execute the following when updating a DEC 2000 AXP using an ULTRIX host. Note that MOP is not supported under DIGITAL UNIX.
2. Add the node using the addnode command.

   ```
   # addnode sys -h 08-00-2B-xx-yy-zz -l DEC2000_V2_2.SYS
   ```

Note

The variable xx-yy-zz represents the target system's hardware address. To determine the Ethernet address, enter the `show device` command at the console prompt:

```
>>> show device
BOOTDEV    ADDR     DEVTYPE    RM/FX    DEVNAM   REV   NUMBYTES
-------    ----     -------    -----    ------   ---   --------
ERA0       08-00-2B-2E-31-81
>>>
```

3. Make sure the mop_mom process is running. If `ps aux | grep mop` does not show a `mop_mom` process, then you must start one by issuing the following command as a superuser:

   ```
   # mop_mom
   ```

2.1.6 Step 4: Boot the Firmware Update Utility

To start the Firmware Update Utility, enter the `boot` command at the console prompt on the target system. The following commands start a boot process:

1. Booting VMS

   ```
   >>> boot <device_name> -fi DEC2000_V2_2
   ```

2. Booting ULTRIX

   ```
   >>> boot <device_name> -fi "DEC2000_V2_2.SYS"
   ```

Note

The filename must be entered exactly as displayed by the ULTRIX host. `device_name` is that name displayed in step 3b.

After the boot process completes, the Firmware Update Utility menu is displayed. Note the Update Utility prompt (UPD->).

```
*** FIRMWARE UPDATE UTILITY V2.2 ***
*** SYSTEM TYPE: DEC 2000 AXP ***
UPDATE
VERIFY
LIST
SHOW
?
UPD->
```

2.1.7 Step 5: Perform Update

To complete the update procedure of your system, refer to Section 1.1, steps 7-11.

2.2 BOOTP Network Upgrade

Set the operating system environment variable to *flash* to perform the firmware update.

```
>>> set os_type flash
OS_TYPE = FLASH_UPDATE
```

2.2.1 Step 1: Mount the Firmware Update Utility CD-ROM

```
# mount -rt cdfs -o noversion /dev/rz4c /mnt
```

2.2.2 Step 2: Modify or Create the Client Database in the /etc/bootptab File

```
<host_name>:ht:<hw_type>:ha=<hw_address>:bf=DEC2000_V2_2.BTP:ip=<ip_address>
```

where:

- host_name is the system name in /etc/hosts.
- hw_type is the hardware type. Proteon is ht = 4. Ethernet is ht = 1. Regular token-ring (IEEE 802) is ht = 6.
- hw_address is the hardware address: use the console command show device.
- ip_address is the corresponding Internet protocol address of the system name in /etc/hosts.

The following is an example of a bootptab file:

```
bigsox:ht=1:ha=08002b236423:bf=/mnt/DEC2000/DEC2000_V2_2.BTP;1:ip=16.182.0.87
```

2.2.3 Step 3: Invoke bootpd and tftpd daemons

- Modify the /etc/inetd.conf file. Uncommon the tftp and bootps process. It should look like the following example:

```
tftp   dgram udp wait root    /usr/sbin/tftpd   tftpd /mnt
bootps dgram upd wait root    /usr/sbin/bootpd  bootpd
```

- Find the process /usr/sbin/inetd daemon:

```
# ps aux | grep ine
# kill process#
```

- Restart the inetd daemon:

```
# /usr/sbin/inetd
```

Note

The bootpd and tftp daemon will be removed if the system is rebooted. Refer to the manual pages: bootpd(8) or tftpd(8) for more information.

2.2.4 Step 4: Enter the Following Command

Enter the following command from the DEC 2000 AXP system to boot from the BOOTP server:

```
>>> boot ez0x
```

where x is either A or B. DEC 2000 AXP systems only support booting from the first two cards, either bus A or bus B.

2.2.5 Step 5: Perform Update and System Initialization

To complete the update procedure of your system, refer to Section 1.1, steps 7-11.

2.3 InfoServer Upgrade

Set the operating system environment variable to *flash* to perform the firmware update.

```
>>> set os_type flash
OS_TYPE = FLASH_UPDATE
```

2.3.1 Step 1: Enter the Following Command

To perform an upgrade using the InfoServer, enter the following command line. The filename **must** be in uppercase.

```
>>> boot <device_name> -fi DEC2000_V2_2
```

where <device_name> is that shown in step 3b.

The following example upgrades a Model 300 system:

```
>>> b era0 -fi DEC2000_V2_2
INIT-S-CPU...
AUDIT_BOOT_STARTS ...
AUDIT_BOOT_REQUEST DEC2000_V2_2.SYS
AUDIT_BSERVER_FOUND
AUDIT_LOAD_BEGINS
AUDIT_LOAD_DONE
*** FIRMWARE UPDATE UTILITY V2.2 ***
*** SYSTEM TYPE: DEC 2000 AXP ***
UPDATE
VERIFY
LIST
SHOW
?
UPD->
```

2.3.2 Step 2: Perform Update and System Initialization

To complete the update procedure of your system, refer to Section 1.1, steps 7-11.