DEC 4000 AXP™ Systems

Firmware Update Procedures

Digital Equipment Corporation
Maynard, Massachusetts

First Printing, July 1994
Revised, May 1995
Revised, August 1995
Revised, December 1995
Revised, March 1996
Revised, May 1996
Revised, September 1996
Revised, December 1996
Revised, March 1997
Revised, August 1997
Revised, October 1997
Revised, February 1998
Revised, May 1998
Revised, September 1998
Revised, March 1999

Digital Equipment Corporation makes no representations that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do the descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

Possession, use, or copying of the software described in this publication is authorized only pursuant to a valid written license from DIGITAL or an authorized sublicensor.

Copyright © Digital Equipment Corporation, 1994, 1995, 1996, 1997, 1998, 1999. All Rights Reserved.

COMPAQ, the Compaq logo and the Digital logo Registered in U.S. Patent and Trademark Office.

Alpha, Bookreader, DEC, DECchip, DECpc, DECwindows, DEC VET, DIGITAL, InfoServer, OpenVMS, RRD43, RZ, TURBOchannel, ULTRIX, VAX, VAX DOCUMENT, and VMS are trademarks of Compaq Computer Corporation.

PostScript is a registered trademark of Adobe Systems, Inc. Windows NT is a trademark of Microsoft, Inc. Motif is a registered trademark of the Open Software Foundation, Inc., licensed by DIGITAL. UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company Ltd.

All other trademarks and registered trademarks are the property of their respective holders.

FCC NOTICE: The equipment described in this manual generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense may be required to take measures to correct the interference.

This document was prepared using VAX DOCUMENT Version 2.1.

Contents

Preface v

1 DEC 4000 AXP Firmware Update Procedure

1.1 Task Overview 1–1
1.1.1 Update from CD-ROM 1–1
1.1.1.1 Step 1: Shut Down the Operating System and Reset the System 1–1
1.1.1.2 Step 2: Identify the Current Firmware Version, Processor Revision, and Boot Device 1–2
1.1.1.3 Step 3: Boot the System from the Update Utility Compact Disc 1–3
1.1.1.4 Step 4: Perform the Firmware Update 1–4
1.1.1.5 Step 5: Run the New Firmware 1–5
1.1.2 Update from InfoServer 1–5

2 DEC 4000 AXP Console Security Features

2.1 Commands 2–1
2.1.1 set password 2–1
2.1.2 set secure 2–1
2.1.3 login 2–2
2.1.4 clear password 2–2
2.2 Secure Mode Functions 2–2
2.2.1 boot 2–2
2.2.2 start and continue 2–2
2.2.3 Ctrl/x 2–2
2.3 Security Console Examples 2–4
2.3.1 Password Examples 2–4
2.3.2 Secure Feature Examples 2–4
2.3.3 Boot Examples 2–5
2.3.4 Login Examples 2–5

3 New DEC 4000 AXP Firmware Information

3.1 New Features 3–1
3.2 Known Bugs and Restrictions 3–1

4 Update Utility

4.1 Update Utility Procedure 4–1
4.2 Overriding Earlier Version of the Firmware 4–3

Figures

2–1 Location of Baud Rate Switch 2–3

Tables

1 DEC 4000 Model 6x0 AXP vi
2 DEC 4000 Model 7x0 AXP vii
1–1 Procedure for Updating DEC 4000 AXP Firmware 1–1

Preface

Purpose of This Guide

This guide is intended for managers of the DEC 4000 Model 6x0/7x0 AXP systems.

Note

The x in the model number for the DEC 4000 AXP indicates the number of CPUs in the system. x = 1–2 CPUs.

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

Note

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.

Note

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

The following tables show the compatibility between the firmware revisions and revisions of OpenVMS and DIGITAL UNIX.

Table 1 DEC 4000 Model 6x0 AXP

Firmware Rev	OpenVMS	DIGITAL UNIX
3.0	1.5	1.2
3.1	1.5	1.3
3.2	1.5	1, 1.3, 1.3A, 1.3B
3.3	1.5	1.3, 1.3A, 1.3B, 2.0
3.4	1.5, 6.1	1.3, 1.3A, 1.3B, 2.0, 3.0
3.5	1.5, 6.1, 6.2	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C
3.6	1.5, 6.1, 6.2, 7.0	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C
3.7	1.5, 6.1, 6.2, 7.0	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C, 4.0
3.8	1.5, 6.1, 6.2, 7.0	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C, 4.0, 4.0A
3.9	1.5, 6.1, 6.2, 7.0, 7.1	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C, 4.0, 4.0A, 4.0B
4.0	6.2, 7.0, 7.1	4.0B, 4.0C, 4.0D

Table 2 DEC 4000 Model 7x0 AXP

Firmware Rev	OpenVMS	DIGITAL UNIX
3.2	1.5	1.3A, 1.3B
3.3	1.5	1.3, 1.3A, 1.3B, 2.0
3.4	1.5, 6.1	1.3, 1.3A, 1.3B, 2.0, 3.0
3.5	1.5, 6.1, 6.2	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C
3.6	1.5, 6.1, 6.2, 7.0	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C
3.7	1.5, 6.1, 6.2, 7.0	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C, 4.0
3.8	1.5, 6.1, 6.2, 7.0	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C, 4.0, 4.0A
3.9	1.5, 6.1, 6.2, 7.0, 7.1	1.3, 1.3A, 1.3B, 2.0, 3.0, 3.2B, 3.2C, 4.0, 4.0A, 4.0B
4.0	6.2, 7.0, 7.1	4.0B, 4.0C, 4.0D

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 4000 AXP Model 6x0/7x0 Owner's Guide	EK–KN430–OP
DEC 4000 AXP Model 6x0/7x0 Technical Manual	EK–KN430–TM
DEC 4000 AXP Model 6x0/7x0 Service Guide	EK–KN430–SV

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 Street
PKO3-2/E30
Maynard, MA 01754-2199

1

DEC 4000 AXP Firmware Update Procedure

The following firmware update procedures are described in this chapter:

- Update from CD-ROM
- Update from InfoServer

1.1 Task Overview

Table 1–1 lists the steps required to update the DEC 4000 AXP firmware.

Table 1–1 Procedure for Updating DEC 4000 AXP Firmware

Step	Description
1	Shut down the operating system
2	Identify firmware version, processor revision, and boot device
3	Boot the Update Utility
4	Perform the update
5	Run the new firmware

1.1.1 Update from CD-ROM

The following procedure describes how to update your firmware using the CD-ROM.

1.1.1.1 Step 1: Shut Down the Operating System and Reset the System

Before you update the firmware, you must reset the system as follows:

1. Shut down the operating system as described in your operating system documentation.
2. When the operating system shutdown is completed, halt the system by pressing the halt button on the operator control panel (OCP).
3. The `auto_action` environment variable controls autobooting. If the system is configured to autoboot, disable autoboot by modifying the `auto_action` environment variable as shown in the following examples. Make note of the original environment variable setting because you must restore it when the update is complete.

   In this case the `auto_action` environment variable is set to boot.

```
>>>show auto_action
auto_action BOOT
```

If you need to disable autoboot, set the auto_action environment variable to halt as shown in the following example:

```
>>> set auto_action halt
>>>
```

4. Reset the system by pressing the Reset button on the operator control panel (OCP). At this point the DEC 4000 AXP should reset, rerun diagnostics, and return to the console prompt, >>>.

1.1.1.2 Step 2: Identify the Current Firmware Version, Processor Revision, and Boot Device

1. To determine the console version, PALcode versions, and processor revision, use the show config command as shown in the example below. The console and PALcode revisions appear on the top line. Use the firmware version shown here and refer to Table 1 and Table 2 in the preface to determine whether to update the system firmware. In this example the console version is V3.6-1.

```
>>> show config

     Console V3.6-1              VMS PALcode X5.48A, OSF PALcode X1.34A

     CPU 0         P    B2001-BA DECchip (tm) 21064-3
     CPU 1         P    B2001-BA DECchip (tm) 21064-3
     Memory 0      P    B2002-DA 128 MB
     Memory 1      P    B2002-DA 128 MB
     Memory 2      P    B2002-CA  64 MB
     Memory 3      P    B2002-CA  64 MB
     Ethernet 0    P    08-00-2B-3E-18-CC
     Ethernet 1    P    08-00-2B-3E-18-CD

                        ID 0  ID 1  ID 2  ID 3  ID 4  ID 5  ID 6  ID 7
                        ----------------------------------------------
     A     DSSI    P    RF74                                     Host
     B     DSSI    P    RF36  RF36                               Host
     C             P
     D             P
     E     SCSI    P    RRD42                                    Host
     Futurebus+    P                      FBC0

     System Status Pass        Type b to boot

>>>
```

2. The processor revision appears on the second text line. It is the number after the dash in DECchip™ 21064. In this example the processor revision is ‘‘3’’. Beginning with V3.4, the console firmware only supports processor revision 3 and only one update file is included on the Update CD. Therefore, use [DEC4000]CFW_V40_UPDP3.EXE to update your revision 3 system.

3. To determine the device name of your CD-ROM reader use the show device command. In this example, the boot device for the update is dke0.

```
>>>
>>> show device
dke0.0.0.4.0            DKE0              RRD42   4.5d
>>>
```

1.1.1.3 Step 3: Boot the System from the Update Utility Compact Disc

To boot the Update Utility (UPD) from the Update Utility compact disc:

- Use the console `boot` command with the `-flag` option.
- Use flags ‘‘0,a0’’.
- Use the compact disc device name found with the `show device` command.

In the following example, the removable media device, dke0, is used to boot the system.

```
>>> boot dke0 -flags 0,a0

.
.
.
```

The console prompts you for a file name. Enter the file name of the Update Utility, [DEC4000]CFW_V40_UPDP3.EXE.

```
.
.
.
jumping to bootstrap code
Bootfile:  [dec4000]cfw_v40_updp3.exe

VMS PALcode V5.56A OSF PALcode V1.45A (CPU 1 of 1, DECchip (tm) 21064-3)
.
.   Powerup screens or powerup log will be displayed here.
.

                ***** Loadable Firmware Update Utility *****
--------------------------------------------------------------------------
 Function    Description
--------------------------------------------------------------------------

 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, and firmware name if found by LFU.
 Update      Replaces current firmware with loadable data image.
 Verify      Compares loadable and hardware images.
 ? or Help   Scrolls this function table.
--------------------------------------------------------------------------

UPD>
```

Caution

If this file does not boot on your system, recheck your configuration and try again. If after several attempts this file does not boot, contact your Customer Support Center.

1.1.1.4 Step 4: Perform the Firmware Update

If the Update Utility (UPD) boot has completed successfully, the update menu is displayed and the UPD> prompt appears. At this point you can choose to update all adapter firmware or just the DEC 4000 AXP console firmware. Use the `list` command for a listing of all firmware found by UPD.

Caution

Once the update procedure is started, do not interrupt it. An interrupt during procedure execution may render the system inoperable.

```
                ***** Loadable Firmware Update Utility *****
--------------------------------------------------------------------------
 Function    Description
--------------------------------------------------------------------------

 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, and firmware name if found by LFU.
 Update      Replaces current firmware with loadable data image.
 Verify      Compares loadable and hardware images.
 ? or Help   Scrolls this function table.
--------------------------------------------------------------------------

UPD> list

device            FW Rev           Filename               Found

fbc0                               defaa_fw                 Y

io                 3.6             cfw_e43                  Y
```

Enter `update *` to update all firmware as follows:

```
UPD> update *

Confirm update on:
fbc0
io
[Y/(N)] Y
WARNING: updates may take several minutes to complete for each device.
                           DO NOT ABORT!
fbc0            Updating to ...  Verifying 1.10 ...  PASSED.

io              Updating to 4.0...  Verifying 4.0...  PASSED.
```

To update only the console, enter the `update io` command.

Caution

If the update fails, do not cycle power or reset the system.

Your system may still be operational; however, the integrity of the FEPROMs may have been compromised. Resetting or cycling power may render the system inoperable.

Contact your Customer Support Center.

1.1.1.5 Step 5: Run the New Firmware

When the update is complete, the system is still running the Update Utility.

1. When the update has completed successfully, enter the `exit` command. The console resets automatically. If your hardware does not support this feature, you are asked to reset the console manually.

```
UPD> exit

IIC bus Status (08) error
Error in write of 4 bytes to location 00000000 on device iic_psc

 ********  Hardware revision level does not permit automatic reset. ********

 ********                Please reset console manually.            ********
```

   Upon completion of the automatic or manual reset the system is running the new firmware.

   The following is displayed on the console terminal:

```
VMS PALcode V5.56A OSF PALcode V1.45A
.
.  Powerup screens or powerup log will be displayed here.
.
DEC 4000 AXP (tm) console V4.0, built on Jan 11 1998 at 14:14:44

>>>
```

2. Remove the Update Utility disc from the CD drive and replace it with the original compact disc.
3. Reboot the operating system. (See your *DEC 4000 AXP Owner's Guide*.)

1.1.2 Update from InfoServer

The Update Utility may be booted from the InfoServer. To boot the Update Utility:

- Use firmware compact disc Version 5.3.
- Use InfoServer software Version 2.2 or higher.
- Make certain that MOP is enabled on the InfoServer. See the *InfoServer System Operation Guide* (AA–PJXJA–TE) for more information.
- Enter the console `boot` command as shown:

```
>>>boot -file CFW_V40_UPDP3 eza0
```

Note

The file name must be entered in uppercase, as shown, when booting from the Infoserver.

Continue with the update procedure as described in Section 1.1.1.4.

2

DEC 4000 AXP Console Security Features

DEC 4000 AXP Firmware Version 4.0 contains the same console security features introduced in Version 3.2. Information on the security feature is available from the online help facility. The following two modes are supported:

1. Secure mode allows you to perform only the `start, continue, boot` (no parameters), and `login` commands.
2. Full feature mode allows you access to perform all commands.

2.1 Commands

2.1.1 set password

The `set password` command sets the environmental variable *password* with an encrypted representation of the password.

- You are asked to enter a new password with the following prompt:

  ```
  Please enter the password:
  ```

- The password is checked for length (minimum password length is 15 alphanumeric characters).
- There is effectively no maximum password length since input is truncated at 30 characters.
- If the password is the minimum length, you are prompted as follows:

  ```
  Please enter the password again:
  ```

- If no valid password is stored in NVRAM, then the new password is stored in NVRAM.
- If a valid password exists, you are asked to enter it before the new password is written to the NVRAM.
- The password is not changed if the validation password entered does not match the existing password in the NVRAM.

2.1.2 set secure

The `set secure` command places the console in the secure mode if a valid password is stored in NVRAM.

- Secures the console if a valid password is in the NVRAM and informs you to set the password if it has not been set with the following prompt:

  ```
  Secure not set. Please set the password.
  ```

2.1.3 login

The `login` command accesses all console commands on a secure system.

- Verifies that a valid password is stored in NVRAM.
- If the password is not valid, you see the following prompt:

```
Secure not set. Please set the password.
```

- If the password is valid, you see the following prompt:

```
Please enter the password:
```

- If the password entered matches the NVRAM password when the prompt is redisplayed, then the console is no longer in the secure mode.

2.1.4 clear password

The `clear password` command clears the environmental variable password.

You must know the current password to clear the environmental variable.

In user mode the `clear password` command clears the environmental variable password after prompting the user for the currently stored password.

2.2 Secure Mode Functions

2.2.1 boot

The `boot` command does not accept command line parameters if the console is in the secure mode.

- When the console is in secure mode, the `boot` command does not accept any parameters.
- The console boots using the environment variables stored in NVRAM (`boot_file`, `bootdef_dev`, `boot_flags`).
- After a successful boot, the console is secured if there is a valid password.
- The `boot` command accepts parameters when the console is not in secure mode.

2.2.2 start and continue

The `start` and `continue` commands are valid commands on a secure console. After the commands are executed, the console is secured if there is a valid password. This prevents you from halting the system and having access to a console that is not secure.

2.2.3 Ctrl/x

Ctrl/x does not create a foreground shell during the power-up script.

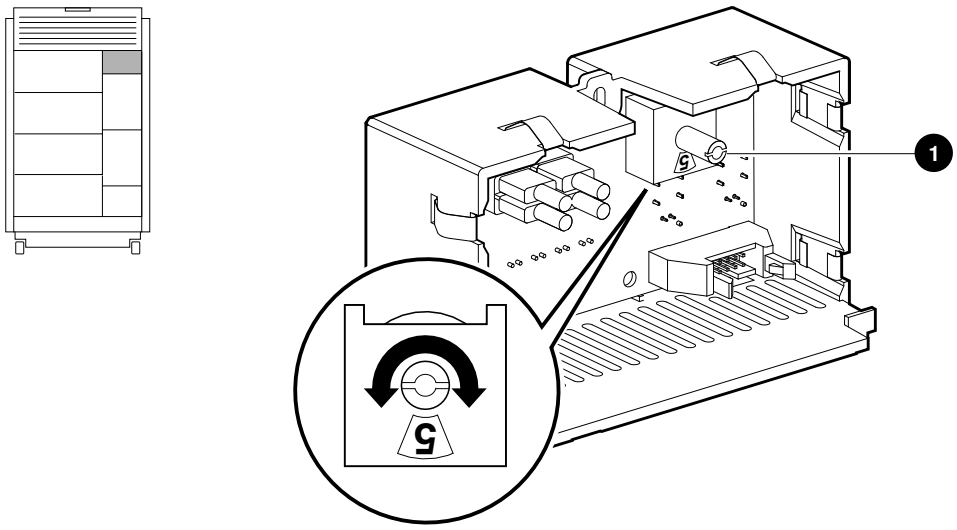
Ctrl/x is disabled during the power-up sequence to prevent the user from spawning a foreground shell that would not be secure.

Lost Password If the console password has been lost, forgotten, or corrupted, you can clear the password by completing the following steps:

1. Using a small Phillips screwdriver, loosen the screw in the top center of the operator control panel.

2. Gently pull the panel out from the system. On the back of the panel, the number in the view window (5 in Figure 2–1) signifies the current baud rate setting.
3. Make a note of your baud rate setting which is controlled by the black plastic screw. On the back of the panel, turn the black plastic screw (❶ in Figure 2–1) to zero (0). Position 0 does not initialize the system but allows you to clear the password.

Figure 2–1 Location of Baud Rate Switch



MLO-007720

4. Restart the system (by default the console port baud rate is set to 9600).
5. Enter the `clear password` command to set the environmental variable password to zero.
6. Power down the system.
7. Set the baud rate switch to the original setting.
8. Replace the operator control panel.
9. Restart the system.
10. The console is not secure unless you specify a new password.

2.3 Security Console Examples

2.3.1 Password Examples

Set Password when Valid Password is in NVRAM

```
>>> set password
Please enter the password:
Please enter the password again:
Now enter the old password:
>>>
```

Set Password when Password is Not in NVRAM

```
>>> set password
Please enter the password: < password is NOT echoed >
Please enter the password again: < validation is NOT echoed >
>>>
```

Password Too Short

```
>>> set password
Please enter the password: < input is NOT echoed >
Password length must be between 15 and 30 characters
>>>
```

Password Validation Error

```
>>> set password
Please enter the password: < password is NOT echoed >
Please enter the password again: < validation is NOT echoed >
Validation error
>>>
```

Clear Password

```
>>> clear password
Console is secure
>>>
```

Successful Clearing of Password

```
>>> clear password
Please enter the password: < Password is not echoed >
Password successfully cleared
>>>
```

2.3.2 Secure Feature Examples

Setting Secure Feature

```
>>> set secure
Console is secure
>>>
>>> show boot_file
Console is secure
```

Unsuccessful Secure when Password is Not in NVRAM

```
>>> set secure
Secure not set. Please set the password.
>>>
```

2.3.3 Boot Examples

Boot from Secure System

```
>>> set boot_file myfile.sys
Console is secure
>>>
>>> boot -file myfile_ev4p2
Console is secure - parameters are not allowed
>>> boot -halt
console is secure - parameters are not allowed
>>> boot ezb0
Console is secure - parameters are not allowed

>>>
```

Successful Boot Without Parameters

```
>>> boot
(boot eza0.0.6.0 -file myfile.sys -flags 0)

Trying MOP boot.
    ...
    ...
    ...

>>>
```

2.3.4 Login Examples

Invalid Login

```
>>> login
Please enter the password: < Password not echoed >
Invalid password
>>>
```

Logging In when Secure Feature is Not Set

```
>>> login
Secure not set. Please set the password.
>>>
```

Valid Login

```
>>> login
Please enter the password: < Password not echoed >
>>>
```

3

New DEC 4000 AXP Firmware Information

3.1 New Features

Version 4.0 of the DEC 4000 AXP console includes the following features:

- Enhancements to support OpenVMS and DIGITAL UNIX Year 2000 Readiness.
- Beginning with DEC 4000 AXP Firmware Version 3.3, NVRAM was reformatted. This means that updating to V3.3 or later from V3.2 or earlier will cause some environment variables to be cleared. If the firmware being updated is V3.2 or earlier, it is recommended that the user make a note of all environment variable settings before performing the update:

```
>>>show *
```

3.2 Known Bugs and Restrictions

- After updating the DEFAA Futurebus+ Adapter firmware to V1.10 the `show fru` command and the `display` command in the Update Utility will show the DEFAA firmware version to be V1.0.
- The `test` command can fail when Futurebus+ devices are present and `fbus` is included as an argument with `disk, scsi` or `dssi`.

```
>>>test disk fbus
Block 001E9880 is not in any zone
Block 00000018 is not in any zone
Block 00000018 is not in any zone
   .
   .
   .
```

A system reset is required to clear the error. This problem can be avoided if the Futurebus+ is tested after other device tests complete.

4
Update Utility

4.1 Update Utility Procedure

The generic Update Utility (UPD) is used to update the firmware for all DEC 4000 AXP adapters. The name of the update image found on the CD-ROM is [DEC 4000]CFW_V40_UPDP3.EXE.

Upon booting the update image from CD-ROM, the update menu and the UPD> prompt are displayed.

```
                ***** Loadable Firmware Update Utility *****
--------------------------------------------------------------------------------
 Function    Description
--------------------------------------------------------------------------------

 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, and firmware name if found by LFU.
 Update      Replaces current firmware with loadable data image.
 Verify      Compares loadable and hardware images.
 ? or Help   Scrolls this function table.
--------------------------------------------------------------------------------
```

Display the current system configuration:

```
UPD> display

                                Rev                     Events logged
 Slot   Option  Part#          Hw Sw   Serial#         SDD     TDD
   1    IO      B2101-AA       H2 32   AY34277925      00      00
   2    CPU1    B2001-BA       B2 34   AY34506479      00      00
   3    CPU0    B2001-BA       B2 34   AY34506482      00      00
   4    MEM0    B2002-DA       C1 0    GA34301955      00      00
   5    MEM1    B2002-DA       C1 0    GA34301964      00      00
   6    MEM2    B2002-CA       B1 0    GA24967390      00      00
   7    MEM3    B2002-CA       B1 0    GA30640800      00      00

Futurebus+ Nodes
                          Rev
 Slot   Option  Part#    Hw   Fw   Serial#             Description
   1
   2
   3    fbc0    B2006-AA 1b0  V1.0  SA43      Fbus+ to FDDI Adapter
   4
   5
   6

UPD>
```

Use the list command to show all the adapters on your system that can be updated with this utility. The console FEPROM is represented by the device name io.

```
UPD> list
device            FW Rev           Filename               Found
fbc0               1.0             defaa_fw                 Y
io                 3.2             cfw_e43                  Y
```

To update the DEC 4000 AXP console, use the `update io` command:

```
UPD> update io

Confirm update on:
io
[Y/(N)]Y
WARNING: updates may take several minutes to complete for each device.
                          DO NOT ABORT!
io              Updating to 4.0...  Verifying 4.0...  PASSED.
```

You can update all adapters on your system at once. In the following example, to update the DEC 4000 AXP console and the Futurebus+ to FDDI adapter, enter the command `update *`.

```
UPD> update *

Confirm update on:
fbc0
io
[Y/(N)]Y
WARNING: updates may take several minutes to complete for each device.
                          DO NOT ABORT!
fbc0            Updating to    ...  Verifying 1.10...  PASSED.
io              Updating to 4.0...  Verifying 4.0...  PASSED.
UPD>
```

You can use the Update Utility to verify the currently loaded console against the update image:

```
UPD> verify io
io              Verifying 4.0...  PASSED.
UPD> exit
```

Enter `help <command>` to receive detailed information on each command. For example:

```
UPD> help verify
 Verify a particular device with LFU's firmware.
   The command format is: VERIFY <device> [-PATH <filename>]
   For example:
           verify *
   Will verify all LFU supported devices found in this system
           verify io
   Will verify the device named IO
   Use the LIST command to see the supported LFU devices
```

```
You can optionally verify a device with different firmware than
defaulted to by LFU, by using the -PATH switch.
For example:
        verify io -path mopdl:new_firm/eza0

Will verify the device named IO with firmware NEW_FIRM from the
network.
```

Upon exiting, UPD automatically resets the console. If your hardware does not support remote reset of the console, you are prompted to reset the console manually as follows:

```
IIC bus Status (08) error
Error in write of 4 bytes to location 00000000 on device iic_psc
 ********  Hardware revision level does not permit automatic reset. ********
 ********                Please reset console manually.            ********
```

4.2 Overriding Earlier Version of the Firmware

It may be desirable to use an earlier version of the firmware. This is achieved by updating the desired image through the Ethernet from a system that has MOP enabled. The online help command for the Update Utility also provides instructions on how to do this.

In the following example, Version 2.5 of the console is booted using the Update Utility for V4.0. First, boot the update image as shown:

```
>>>boot -file cfw_v40_updp3 eza0
```

When you arrive at the `UPD>` prompt, use the `update io` command with the `-path` qualifier as shown:

```
                ***** Loadable Firmware Update Utility *****
--------------------------------------------------------------------------------
 Function    Description
--------------------------------------------------------------------------------

 Display     Displays the system's configuration table.
 Exit        Done exit LFU (reset).
 List        Lists the device, revision, and firmware name if found by LFU.
 Update      Replaces current firmware with loadable data image.
 Verify      Compares loadable and hardware images.
 ? or Help   Scrolls this function table.
--------------------------------------------------------------------------------

UPD> update io -path mopdl:cfw_v25_e43/eza0

Confirm update on:
io
[Y/(N)]Y

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

                           DO NOT ABORT!

io              firmware rev 4.0 is greater than hardware rev 2.5.
Continue [Y/(N)]Y

io              Updating to 2.5...  Verifying 2.5...  PASSED.

UPD> exit
```

Because the specified console version is earlier than what this update image installs by default, you are asked to confirm the update.