DEC 7000 AXP and DEC 10000 AXP Systems

Firmware Update Procedures

Digital Equipment Corporation
Maynard, Massachusetts

First Printing, July 1994
This revision, 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 AXP, AXP, 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. UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company. Motif is a registered trademark of the Open Software foundation, Inc., licensed by DIGITAL.

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 7000 AXP and DEC 10000 AXP Firmware Update Procedure

1.1 Revision Information for the Loadable Firmware Update Utility 1–1
1.2 DEC 7000 AXP and DEC 10000 AXP Procedure for Upgrading to Version V5.4 1–2
1.2.1 Displaying Customized Parameters 1–2
1.2.2 Updating the Firmware with LFU 1–3
1.2.2.1 Booting from the Local CD-ROM 1–3
1.2.2.2 Booting from the InfoServer 1–5
1.2.3 Updating Console Data Structures 1–7
1.2.4 Restoring Customized Parameters 1–10

2 DEC 7000 AXP and DEC 10000 AXP Console and Diagnostics

2.1 Console and Diagnostic Bugs and Restrictions 2–1
2.1.1 Firmware Revision Information 2–1
2.1.2 Booting Rules 2–1
2.1.3 Command Information 2–2
2.1.4 Restrictions 2–4
2.1.5 Swap/Dump Partition 2–5
2.2 Console and Diagnostic Bugs Fixed 2–5
2.3 NEW Console and Diagnostic Functionality 2–5

Tables

1–1 Module Firmware Revision Matrix 1–2
1–2 Minimum Revision Levels 1–9
1–3 Serial EEPROM Commands 1–10

Preface

Purpose of This Guide

This guide is intended for managers of the following systems:

- DEC 7000 Model 6x0 AXP
- DEC 7000 Model 7x0 AXP
- DEC 10000 Model 6x0 AXP

Note

The x in the model number for the DEC 7000 AXP and DEC 10000 AXP indicates the number of CPUs in the system. x = 1–6 CPUs.

This guide describes how to update the system's firmware using the Loadable Firmware Update (LFU) 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.

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 7000 AXP, VAX 7000 Operations Manual	EK–7000B–OP
DEC 7000 AXP, VAX 7000 System Service Manual	EK–7002B–SV
DEC 7000 AXP, VAX 7000 Console Reference Manual	EK–70C0B–TM
DEC 10000 AXP, VAX 10000 Operations Manual	EK–1000B–OP
DEC 10000 AXP, VAX 10000 System Service Manual	EK–1002A–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 7000 AXP and DEC 10000 AXP Firmware Update Procedure

This chapter describes how to update the DEC 7000 Models 6x0/7x0 AXP and DEC 10000 Model 6x0 AXP console firmware.

For more information about the Loadable Firmware Update Utility (LFU) utility commands and console commands, see the *DEC 7000 AXP, VAX 7000 Operations Manual* and the table of associated documents in the preface of this manual.

Note

Before proceeding with the console update it is recommended that you read these release notes and the release notes for any update versions that have been skipped.

WARNING

This LFU is compatible with all production DEC7600 and DEC7700 cpu modules. It is NOT compatible with pre production DEC7700 cpu modules and using it on them will leave the cpu in an inoperable state. If there is any question as to what type of DEC7700 cpu module you have type mchk at the console prompt and examine the DC_STAT register. If the low order three bits contain a 001 DO NOT UPGRADE THE CPU FIRMWARE WITH THIS LFU. A 011 in the DC_STAT register indicates that this is a production version of the module and you can proceed to upgrade the firmware. This check is not applicable to the DEC7600 cpu.

1.1 Revision Information for the Loadable Firmware Update Utility

The LFU release AXP7000_V18 (for DEC 7000 AXP and DEC 10000 AXP systems) is booted from the embedded SCSI CD-ROM or InfoServer using the DEC 7000 AXP Systems Firmware compact disc.

Note

DEC 7000 Models 6x0/7x0 AXP cannot be located in the same system. The system will not come up if these modules are mixed together. This is unsupported.

This LFU release contains the firmware revisions shown in Table 1-1.

Table 1–1 Module Firmware Revision Matrix

Type	Name	Mnemonic	Hardware	Firmware
0C2F	CIXCD	cixcd	All revs	7.0
2006	DEFAA	defaa	All revs	1.1
0C03	DEMNA	demna	All revs	9.4
0823	DEMFA	demfa	All revs	2.1
0C22	KCM44	kcm44	All revs	3.1
0C22	KDM70	kdm70	All revs	4.4
0C31	KFMSB	kfmsb	B01	1.0
0C31	KFMSB	kfmsb	C02	2.4
8001	KN7AA	kn7aa	All but rev K	5.4
8006	KN7AB	kn7aB	All revs	5.4
0C36	KZMSA	kzmsa	Rev F and greater	5.6

Caution

Attempts to update KZMSA module Rev E or earlier will fail. However, the module is still fully functional with the old microcode (Rev 3.15).

Note

After the DEMFA firmware has been updated to version 2.1 do not downgrade the firmware to a lesser version. Doing so can leave the module inoperative.

1.2 DEC 7000 AXP and DEC 10000 AXP Procedure for Upgrading to Version V5.4

Note

The following examples of console output are provided to illustrate the update process. The actual output while updating the firmware may be different depending on the firmware revision currently installed on your CPU.

1.2.1 Displaying Customized Parameters

Enter `sho *` to display all current customized settings:

Note

Record your customized parameters so that after the update you can change the default values to your original customized settings.

```
P00>>> sho *

auto_action         HALT
baud                 9600
boot_dev
boot_file
boot_osflags
boot_reset          ON
bootdef_dev         dua214.0.0.9.0
booted_dev
cpu                 0
cpu_enabled         ff
cpu_primary         ff
d_harderr           halt
d_report            summary
d_softerr           continue
dump_dev
enable_audit        ON
interleave          default
language            36
pal                 V5.48-1/01.35-1
prompt              >>>
system_variant
version             V3.2-4445    Mar 23 1994 10:04:22
P00>>>
```

- The EEPROMs are rebuilt later in the upgrade. The rebuild causes all environment variables to be set to their default values. All user-defined environment variables are erased.
- Section 1.2.4 shows how to restore customized parameters to current values.

1.2.2 Updating the Firmware with LFU

The LFU program is booted from the local CD-ROM or InfoServer.

If booting from your local CD-ROM, see Section 1.2.2.1. If booting from the InfoServer, see Section 1.2.2.2.

Note

The version/revision numbers displayed by the system in the following examples may not match exactly those that you will see when following the procedure. They may vary depending on the initial configuration and revision of your system.

1.2.2.1 Booting from the Local CD-ROM

Note

KN7AA CPU modules containing different revisions of console firmware can be incompatible with one another. Using the `update` command with incompatible versions can have undesirable effects. DIGITAL recommends that you use only the LFU image to upgrade the console firmware.

Note

Set `auto_action` to *halt* before running LFU.

1. Enter sho dev at the >>> prompt as shown in the following example:

```
>>> sho dev kzmsa*
polling for units on kzmsa0, slot 3, xmi0...
dka100.1.0.3.0     DKA100                 RRD42
dkb300.3.0.3.0     DKB300                  RZ26
```

2. Enter boot with boot flags 0,80 at the >>> prompt as shown in the following example:

```
>>> boot dka100.1.0.3.0 -flag 0,80
               .
               .
               .
Initializing...

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
                        A   .   M   .   .   .   .   .   P   TYP
                        o   .   +   .   .   .   .   .   +   ST1
                        .   .   .   .   .   .   .   .   B   BPD
                        o   .   +   .   .   .   .   .   +   ST2
                        .   .   .   .   .   .   .   .   B   BPD
                        +   .   +   .   .   .   .   .   +   ST3
                        .   .   .   .   .   .   .   .   B   BPD

    +   .   +   .   .   .   +   .   .   .   .   +   .   .       C0 XMI +
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C1
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C2
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C3

                        .   .  A0   .   .   .   .   .   .   ILV
                        .   .  64   .   .   .   .   .   .   64MB

Firmware Rev = V3.2-4445        SROM Rev = V2.2-0    SYS SN = SG00000000
>>>
Booting...
Connecting to boot device dka100.1.0.3.0
block 0 of dka100 is a valid boot block
reading 7561 blocks from dka100.1.0.3.0
bootstrap code read in
base = 1fe000, start = 0
initializing HWRPB at 2000
initializing page table at 1f2000
initializing machine state
jumping to bootstrap at 1fe000

!   To boot LFU on a DEC 7000 AXP system:
Bootfile: [DEC7000]AXP7000_V18.EXE

!   To boot LFU on a DEC 10000 AXP system:
Bootfile: [DEC10000]AXP7000_V18.EXE

               Copyright Digital Equipment Corporation
                             1991, 1992, 1993.
                          All Rights Reserved.

    Loadable Environment Rev: V4.0-4560          Oct 31 1994 14:27:56

               ***** Loadable Firmware Update Utility *****
                Version 11.6                   9-Dec-1993


--------------------------------------------------------------------------------
  Function      Description
--------------------------------------------------------------------------------
```

```
  Display       Displays the system's configuration table.
  Exit          Return to loadable offline operating environment.
  List          Lists the device types and firmware revisions supported by
                 this revision of LFU.
  Modify        Modifies port parameters and device attributes.
  Show          Displays device mnemonic, hardware and firmware revisions.
  Update        Replaces current firmware with loadable data image.
  Verify        Compares loadable and device images.
  ? or Help     Scrolls the function table.
-------------------------------------------------------------------------------
```

Note

Some earlier displays may have a slightly different format than the one shown on the console screen during this update procedure.

To complete the update, see Step 6 in Section 1.2.2.2.

1.2.2.2 Booting from the InfoServer

Note

Steps 4 and 5 are for booting from the InfoServer only.

4. Enter `boot exa0 -file AXP7000_V18` at the >>> prompt as shown in the following example:

```
>>>boot exa0 -file AXP7000_V18
Initializing...

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE#
                        A   .   .   M   .   P   .   .   .   TYP
                        o   .   .   +   .   +   .   .   .   ST1
                        .   .   .   .   .   B   .   .   .   BPD
                        o   .   .   +   .   +   .   .   .   ST2
                        .   .   .   .   .   B   .   .   .   BPD
                        +   .   .   +   .   +   .   .   .   ST3
                        .   .   .   .   .   B   .   .   .   BPD

    +   .   +   .   .   .   +   .   .   .   .   +   +   +       C0 XMI +
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C1
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C2
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C3

                            .   .   .  A0   .   .   .   .   .   ILV
                            .   .   .  64   .   .   .   .   .   64MB

Firmware Rev = V3.2         SROM Rev = V2.2-0      SYS SN = SG000000
>>>
Booting...
connecting to boot device exa0
Created device: exa0.0.0.1.0

Requesting MOP Assistance Volunteer.....
MOP Assistance Volunteer found.

Loading...
.......
Load complete!
Image size: 445952
Host name: P9_ESS
Host address: 08-00-2B-24-72-6B
```

```
bootstrap code read in
base = 1f6000, start = 20000000
initializing HwRPB at 2000
initializing page table at 1ea000
initializing machine state
jumping to bootstrap at 20000000

                Copyright Digital Equipment Corporation
                            1991, 1993.
                        All Rights Reserved

 Loadable Environment Rev: V4.0-4560         Oct 31 1994 14:27:56
```

Note

The remaining steps must be completed for booting either mode used.

6. Enter `update *` at the Function? prompt to list all devices and their status.

```
Function? update *

            Name        Type      Rev     Mnemonic   FW Rev   HW Rev
   LSB
   0+       KN7AA       (8001)    400D    kn7aa0                M
   6+       MS7AA       (4000)    0000    ms7aa0
   8+       IOP         (2000)    0006    iop0

   CO XMI                                  xmi0
   3+       KZMSA       (0C36)    5142    kzmsa0       5.6      F01
   8+       DWLMA       (102A)    0104    dwlma
   C+       KDM70       (0C22)    2811    kdm700       4.4
   E+       DEMNA       (0C03)    0803    demna0       9.4
```

7. Enter `Y` to update all devices.

```
Update ALL devices? [Y/(N)]Y

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

                          DO NOT ABORT!
   kn7aa0   Updating to 5.4... Reading Device... Verifying 5.4... PASSED.
   ms7aa0   Not supported under LFU.
   iop0     Not supported under LFU.
   dwlma0   Not supported under LFU.

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

                          DO NOT ABORT!
   kzmsa0   Updating to 5.6... Reading Device... Verifying 5.6... PASSED.

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

                          DO NOT ABORT!
   kdm700   Updating to 4.4... Reading Device... Verifying 4.4... PASSED.
   demna0   Firmware rev is greater or equal to update rev.
```

Note

If the message ''*device* firmware rev is greater or equal to update rev'' is displayed, you can ignore it. Enter `Y` to continue update.

8. Enter `Y` to continue update.

```
Continue? [Y/(N)]Y
Warning: Updates may take several minutes to complete for each device.

                              DO NOT ABORT!
   demna0   Updating to 9.4... Reading Device... Verifying 9.4... PASSED.
```

9. Enter `exit` at the Function? prompt.

```
Function?exit

Initializing...

F   E   D   C   B   A   9   8   7   6   5   4   3   2   1   0   NODE #
                        A   .   M   .   .   .   .   .   P   TYP
                        o   .   +   .   .   .   .   .   +   ST1
                        .   .   .   .   .   .   .   .   B   BPD
                        o   .   +   .   .   .   .   .   +   ST2
                        .   .   .   .   .   .   .   .   B   BPD
                        +   .   +   .   .   .   .   .   +   ST3
                        .   .   .   .   .   .   .   .   B   BPD

    +   .   +   .   .   .   +   .   .   .   .   +   .   .       C0 XMI +
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C1
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C2
.   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   C3

                        .   .  A0   .   .   .   .   .   .   .   ILV
                        .   .  64   .   .   .   .   .   .   .   64MB

Firmware Rev = V5.4-4814          SROM Rev = V3.0-0      SYS SN = SG00000000
>>>
```

1.2.3 Updating Console Data Structures

The EEPROMs for the secondary and primary CPU must be initialized. Illustrated below is an example of updating a dual CPU with the `build eeprom` command.

1. Reinitialize the EEPROM on the primary CPU using the `build eeprom` command.

```
P00>>>build nvr
P00>>>build eeprom
Create new EEPROM immage [Y/(N)]?Y
Creating new EEPROM Image
```

2. Initialize the EEPROM on the secondary CPU using the `build eeprom` command. Repeat this procedure for each secondary CPU.

```
P00>>>set cpu 1
P01>>>build nvr
P01>>>build eeprom
Create new EEPROM image [Y/(N)]Y
Creating new EEPROM Image
```

3. Save a new configuration with the `set config` command. Select the primary CPU to save this configuration.

```
Creating new EEPROM Image
P01>>>set cpu 0
P00>>>set config
```

Note

The EEPROM process resets your terminal baud rate to the default value of 9600.

4. Enter the `sho baud` command. Your previous setting is displayed even though the process set your terminal baud rate to 9600.

```
P00>>> sho baud
baud            2400
```

5. Enter the `set baud` command and the desired baud rate as shown in the following example. The baud rate of 2400 is used for the desired setting.

```
P00>>> set baud 2400
baud set to 2400
P00>>>
```

Initializing Serial EEPROMs

Initialize the following supported module EEPROMS using the `build seeprom` command.

- DWLAA
- DWLMA
- IOP
- MS7AA
- MS7BB

The first time the serial EEPROMs are built, you are prompted with two prompts: the module serial number prompt (Serial Number>) and the part number prompt (Part Number>). Answer both prompts. The module serial number and the module part number are located on the yellow label on the module.

Note

You can enter any value for the module firmware revision. These modules do not have firmware.

The following are examples of serial EEPROM initialization using the MS7AA, IOP, and two DWLMA modules:

```
P00>>> build seeprom *

Create new serial EEPROM image for ms7aa0 [Y/(N)]? Y
Creating new serial EEPROM image for ms7aa0
Module Serial Number> sg1234567
Module Unified 2-5-2.4 Part Number> 20-E2043-AA.0000
Module Firmware Revision> xx
please wait ~1 min, writing ms7aa0

Create new serial EEPROM image for iop0 [Y/(N)]?Y
```

```
Creating new serial EEPROM image for iop0
Module Serial Number> sg1234567
Module Unified 2-5-2.4 Part Number> 20-E2044-AA.0000
Module Firmware Revision> xx
please wait ~1 min, writing iop0


Create new serial EEPROM image for dwlma0 [Y/(N)? Y
Creating new serial EEPROM image for dwlma0
Module Serial Number> sg1234567
Module Unified 2-5-2.4 Part Number> 20-T2028-AA.0000
Module Firmware Revision> xx
please wait ~1 min, writing dwlma0

Create new serial EEPROM image for dwlma1 [Y/(N)? Y
Creating new serial EEPROM image for dwlma1
Module Serial Number> sg1234567
Module Unified 2-5-2.4 Part Number> 20-T2028-AA.0000
Module Firmware Revision> xx
please wait ~1 min, writing dwlma1
```

Initializing MS7BB Serial EEPROMs

The `test` command and power up testing are supported for the MS7BB (battery backed-up memory). The testing supports PrestoServe on UNIX operating systems.

Table 1–2 contains the minimum revision levels of the CPU required for installation of the MS7BB module.

Table 1–2 Minimum Revision Levels

Module	Minimum Revision Level
E2040-YA	E01
E2040-AB	B01
E2057-AA	C01

The `prcache` command manages the MS7BB battery replacement date stored in the EEPROM on the MS7BB module.

Command	Description
`prcache -b`	Prompts the user to enter the next MS7BB battery replacement date.
`prcache -f`	Displays the information stored in the serial EEPROM.
`prcache -z`	The MS7BB memory is zeroed out.

The `set`, `show`, `clear`, and `build` commands support serial EEPROM. Table 1–3 lists the syntax of the supported commands:

Table 1–3 Serial EEPROM Commands

Command	Syntax	Description
`set`	`set seeprom` *{option}*[1] *{device}*[2]	Sets specific areas in the serial EEPROM.
`show`	`show seeprom` *{option}*[1] *{device}*[2]	Shows specific areas in the serial EEPROM.
`clear`	`clear seeprom` *{option}*[1] *{device}*[2]	Clears specific areas in the serial EEPROM.
`build`	`build seeprom` *{device}*[2]	Builds a new image into the specific device.

[1]Valid options are diag_sdd, diag_tdd, field, symptom, and manufacturing

[2]Valid devices are iop, dwlaa, dwlma, ms7aa, and ms7bb

The following is an example of `seeprom` commands:

```
>>> show seeprom man iop0
please wait ~1 min, reading iop0

Module Serial Number = SG00000000
Module Unified 2-5-2.4 Part Number = 00-11111-22.3
Module Firmware Revision = V3.0
>>>
```

Serial EEPROM logging capability is added for diagnostic TDD errors (test-directed diagnostic expected errors).

CPU and serial EEPROM logging is added for diagnostic SDD errors (symptom-directed diagnostic unexpected interrupts/exceptions). This includes the implementation of the error parse trees to call out the failing field replaceable unit (FRU).

1.2.4 Restoring Customized Parameters

To restore the customized system parameters to their original value, complete the following steps:

Note

Refer to the list of customized parameters that you created earlier in Section 1.2.1 while displaying your settings.

1. Enter `sho *` to display the default settings.

```
>>> sho *
auto_action          HALT
baud                 9600
boot_dev
boot_file
boot_osflags
boot_reset           ON
bootdef_dev
booted_dev
cpu                  0
cpu_enabled          ff
cpu_primary          ff
d_harderr            halt
d_report             summary
d_softerr            continue
dump_dev
enable_audit         ON
interleave           default
language             36
pal                  V5.56-3/01.45-2
prompt               >>>
system_variant       0
version              V5.4-4819      Mar 9 1999 15:28:15
>>>
```

Note

In this example, you need to restore the `bootdef_dev` value.

2. Enter `set bootdef_dev dua214.0.0.9.0` at the >>> prompt.

```
>>> set bootdef_dev dua214.0.0.9.0
bootdef_dev set to dua214.0.0.9.0
```

3. If you are on a DEC 10000 AXP system, issue the following command:

```
>>> set system_variant 1
system variant set to 1
```

4. Enter `init` at the >>> prompt to initialize.

```
>>> init
Initializing...
```

When initialization is complete, you will see a power-up map display.

2

DEC 7000 AXP and DEC 10000 AXP Console and Diagnostics

2.1 Console and Diagnostic Bugs and Restrictions

The following are known bugs and restrictions related to the DEC 7000 AXP and DEC 10000 AXP console/diagnostic firmware V5.4.

2.1.1 Firmware Revision Information

- OpenVMS AXP V1.5 may not boot from a CI disk if the AXPAB01_015.A kit is not installed before the console is upgraded to revision V5.4. Before you proceed, see Section 2.1.2 (booting rules) and Section 2.1.4 (restrictions) for more information.

2.1.2 Booting Rules

- OpenVMS AXP V1.5 will not boot if the CI node number is 2 digits (that is, CI node = 10) and the disk unit number is 3 digits (DUA123) unless the AXPAPB01_015.A kit is installed prior to upgrading the console to revision V5.4. Those sites that will upgrade the console firmware but not upgrade to OpenVMS AXP V6.1 should install this kit.
- The procedure to update the console to V5.4 and keep OpenVMS AXP at V1.5 is as follows:
  1. Use VMSINSTAL under OpenVMS AXP, and install the AXPAPB01_015.A kit from the [DEC7000] area on the CD-ROM.

```
$ @sys$update:vmsinstal

    OpenVMS AXP Software Product Installation Procedure V1.5

It is 25-JUN-1994 at 11:57.

Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]?
* Where will the distribution volumes be mounted: dka100:[DEC7000]

Enter the products to be processed from the first distribution volume set.
* Products: AXPAPB01_015
.
.
.
```

  2. Run LFU as described in Section 1.2.2.
  3. Install OpenVMS AXP V6.1.
- Booting
  - Specify boot devices using the full boot device name.

- There is limited support for abbreviations of some boot device names.
- When booting over the CI, you must enter the full device name.
- You can abbreviate boot device names if you enter the `show device` command prior to booting.

- The environment variable `bootdef_dev` is limited to four devices in a device boot string.
- The console does not support autoboot using HSC95s. Use the EEPROM power-up script to fix this problem.

```
>>> set mode advance
>>> set eeprom script powerup
Script> set mode advance
Script> kn7aa_pwrup
Script> echo -n " Waiting 120 seconds ..." > tt
Script> sleep 120
Script> echo "done." > tt
Script> set mode basic
Script> ^Z
>>>
```

Note

The `kn7aa_pwrup` script is normally run during power-up, except when a power-up script is entered. Adding the `kn7aa_pwrup` command to the power-up script ensures that memory testing is done on power-up. The sleep time can be adjusted.

2.1.3 Command Information

- By default, the Bitmap is now copied to the highest good memory under 2 GB and the pages used for this bitmap are marked as bad. If you want to disable this feature and revert back to the old method where the bitmap is created out of the console heap space, create a non-volatile environment variable by performing the following:

```
>>>create -nv relocate_bitmap off
```

To re-enable the new default:

```
>>>clear -nv relocate_bitmap
```

Note

A system reset must be done for the actions taken on bitmap to take effect.

Note

Be aware that in large memory configurations it may be imperative to use the now default method of placing the bitmap out of console space. Failure to do so may interfere with proper console booting operations.

- This LFU is incompatible with the AXP7000_V09 LFU. If you need to downgrade to the V3.1 console revision you must first use the AXP7000_V0A LFU to down rev to V3.2. An attempt to boot the V09 LFU will result in a console hang.
- The `update -e` command can sometimes corrupt certain areas in the EEPROM. Because of this, updating EEPROMS should be accomplished by building the EEPROMS directly as described in Section 1.2.3.
- The `show device` command sometimes fails to find all MSCP devices. Repeat the command if this happens.
- The `show device` command supports a maximum of 300 disks in a system configuration.
- The `initialize` command abbreviates to one or more letters, with one exception. The following list indicates the exception and the correct letters:
  - You cannot use `in` for `initialize`.
  - You can use: `i`, `ini`, `init`, and so on.
- The following `test` command qualifiers are not supported in this console release: `-write`, `-nowrite`, and `-omit`.
- The `test` command now provides loopback support for network testing:
  - Only the MOP loopback is currently supported.
  - The MOP loopback requires a live network connection for each device.
  - The `test` command currently supports only DEMNA (XMI to NI adapter) testing in MOP live network loopback mode.
  - If the `test` command is run without a live network present, the following error message is displayed and all NET_EX processes are killed:

    ```
    Transmit failed - loss of carrier.
    ```

  - The current revision of DEMFA microcode does not support MOP loopback because FDDI adapters do not process MOP messages.
  - The following intermittent message should be ignored and does not indicate a hardware problem.

    ```
    Timeout error in shutdown routine  - ref count = -1. Counting...
    ```

- If errors occur during testing of disk devices with capacities greater than 2 GB using the `test dk*` command, the error messages may contain negative values.
- Doing a power-up or using the `init` command when memory is not present in the system will result in an error. The error is printed within the console map and followed by the console machine check information. Then the console prompt is displayed. The following list explains errors for single and multiple processor systems:
  - Multiple processor systems will fail to get to the console prompt.
  - Single processor systems will display the following error message in the console map.

```
*** DIVIDE BY ZERO ERROR IN INTLV2DB
Bad module in slot: 0
mem. strings: 0
d:
ilv: 2
banks(d) : 2
mem.size : 0
```

- The CDP command has been moved to DIAGNOSTIC MODE. Use `configure dev KFMSB*` rather than `show device` to build device table.

2.1.4 Restrictions

- The SHOW DEVICE command issued to an HSCXX CI controller from the console with only a single path connected can sometimes result in a loss of memory heap space. Continuous SHOW DEV commands can eventually exhaust heap space resulting in an initialization of the console.
- During the power up diagnostics, if a bad memory spot is detected, the console will now force the module interleave set to NONE. A message will be printed indicating bad spot detection and a subsequent system initialization will occur. The memory with the bad spot will be required to be fixed for the console to allow memory interleaving. This is required because defective memory locations have a high probability of not being reported correctly, thus leaving the bitmap not consistent with the state of the memory.
- Although the `interleave` command is functional, it is still recommended that the interleave be left with its default values. If there is a requirement to change this default value, care must be exercised in the order of array placement. Always place the larger memory (whether single modules or interleave sets) before memory of a smaller size.
- OpenVMS AXP V1.5 will not boot if the CI node number is 2 digits (for example, CI node = 10) and the disk unit number is 3 digits (for example, DUA123) unless the AXPAPB01_015.A kit is installed prior to upgrading the console to revision V5.4.

  Without installing the AXPAPB01_015.A kit, the following message will appear on the console.

  ```
  "APB-F-GETENV, failed to get environment variables"
  ```

  If this message is displayed, reinstall a previous version of the console and follow the booting procedures described in Section 2.1.2.
- Because of a known console problem with MOP V4.0 protocol, the environment variable MOPV3_BOOT has been set to number 1 as the default to ensure MOP booting via the V3.0 MOP protocol.
- After issuing a BOOT command, sometimes extraneous blank lines and a console prompt (>>>) are output to the console before the operating system banner and startup messages appear. Do not attempt to use the console prompt; doing so may cause the bootstrap to fail. The prompt will become inactive after the initial operating system banners and startup messages have been printed.
- MOP booting via the DEFAA adapter is not supported in this console release.

- Support for the CIXCD still does not include support for keeping track of "pathstatus". This means that if there is a bad CI path, there is a small probability that a system will not boot on the first try. A second manual attempt should succeed because the probability is small. Once the booting has read in the first block the rest of the boot should complete successfully.

2.1.5 Swap/Dump Partition

The console firmware does not recognize the disk drive containing the swap/dump partition when UNIX is running.

Failure occurs when a swap/dump partition is placed on a drive that is not the system disk. The UNIX dump program is using the console device driver to perform the memory write. The console device driver does not recognize the dump device.

The following script will force the console to configure and recognize all disk drives on the controller to which the dump disk is connected. In this example the dump disk is connected to kzmsa1.

```
>>> set mode advance
>>> set eeprom script powerup
Script> set mode advance
Script> kn7aa_pwrup
Script> config kzmsa1
Script> set mode basic
Script> ^z
>>>
```

Note

Substitute the appropriate controller name for kzmsa1. The controller name depends on your system configuration and location of the swap/dump disk.

2.2 Console and Diagnostic Bugs Fixed

- Fixed problem with the improper initialization of the PCBB IPR. This register is used during the starting of secondaries. The problem was noticed during the AUTOGEN phase of a VMS upgrade to version 7.2. In most cases the values that were used did not cause a problem. This only affects VMS systems and not DUNIX.

2.3 NEW Console and Diagnostic Functionality

- There has been no change to console or diagnostic functionality.