

DEC 7000/10000 AXP Technical Bulletin Number 1

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This document accompanies the release of the OpenVMS AXP Version 1.5 operating system used on DEC 7000 and 10000 systems. Information is given that was not available when the DEC 7000/10000 AXP documents were first published.

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Section 1

Introduction

This technical bulletin provides information to update the DEC 7000/10000 documentation set. The OpenVMS AXP operating system, Version 1.5, now provides support for the following:

- Symmetric multiprocessing
- OpenVMScLuster capabilities, including mixed architecture clustering
- Booting from an InfoServer

1.1 Changes

Alpha AXP systems and VAX systems may be clustered together using the CIXCD-AC adapter, which is now supported by OpenVMS AXP Version 1.5.

OpenVMS AXP V1.5 supports clustering — of AXP systems and of AXP systems with VAX systems. Version 5.5-2 of the OpenVMS VAX operating system is required for mixed clusters. Mixed clusters also require that each type of system have its own system disk.

Now supported:

- Symmetric multiprocessing
- CD-ROM booting of the operating system and running of the Loadable Firmware Update (LFU) Utility from an InfoServer

LFU and console firmware are now distributed on the Alpha AXP Systems Firmware Update CD-ROM, part number AG-PTMW*- BE. This CD replaces the DEC 7000/10000 AXP Console CD, which has been discontinued.

For more information:

***DEC 7000/10000 AXP System Release Notes
VMSccluster Software for OpenVMS AXP Version 1.5
Software Product Description***

Section 2

Installation

The installation of DEC 7000 and DEC 10000 systems is affected by the release of the OpenVMS AXP Version 1.5 operating system.

A system can now be installed as a member of a cluster. That cluster can be composed of both VAX and Alpha AXP systems. The initial system load can be done from either an RRD42 in the system cabinet or from an InfoServer accessed over the Ethernet.

Before the operating system is booted, however, some adjustments may need to be made to the hardware. The firmware on various modules may need to be updated, and this is done by running the Loadable Firmware Update (LFU) Utility. LFU is on the Alpha AXP Systems Firmware Update CD-ROM.

For systems with expander cabinets, a change was made, for EMC qualification, in how the power control cable from the control panel on the system cabinet connects to the cabinet control logic (CCL) module in the expander cabinet. Section 2.2 supersedes Section 2.18 in the *DEC 10000 AXP System VAX 10000 Installation Guide* and Section 3.13 in the *DEC 7000 AXP System VAX 7000 Installation Guide*. With a DEC 7000, however, the first expander cabinet is to the right of the system cabinet, not to the left of the system cabinet as it is for the DEC 10000.

When servicing systems, note that CCL modules prior to K04 included a pressure sensor. Revisions K04 and later *do not* include a pressure sensor. If the module has a pressure sensor, it should be disconnected or removed.

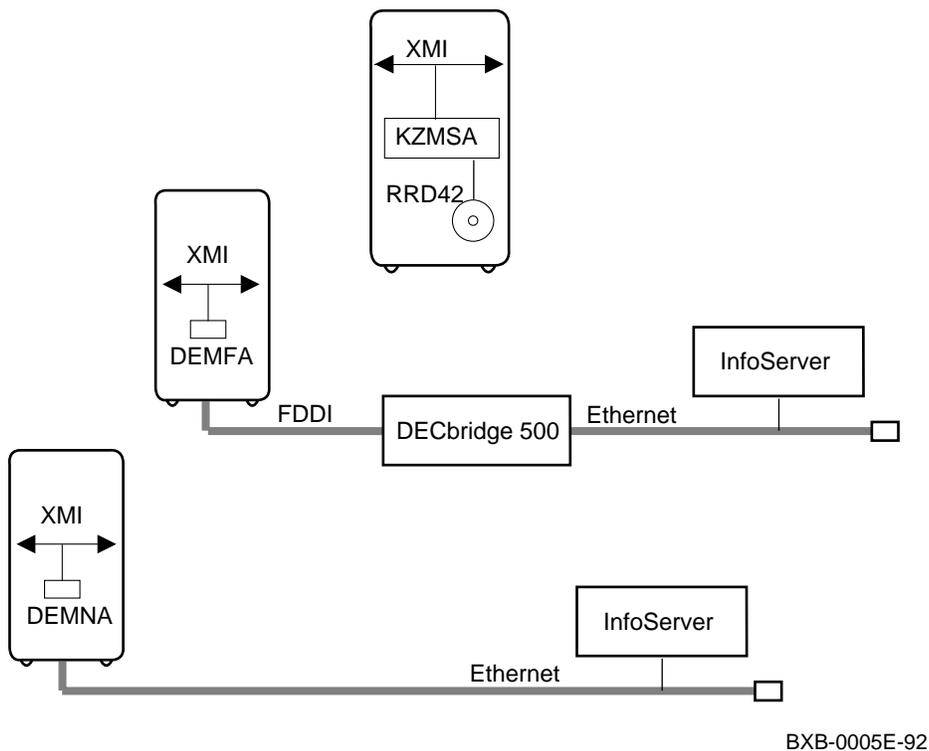
Sections include:

- Console Load Devices
- Expander Cabinet Installation — Connect the Power Control Cable

2.1 Console Load Devices

The RRD42 compact disk (CD) drive in the cabinet or the InfoServer can serve as a console load device. During system installation the console load device is used to boot standalone backup. It is also used to boot the Loadable Firmware Update (LFU) Utility.

Figure 2-1 Accessing the Console Load Device



You may need to run the Loadable Firmware Update (LFU) Utility to upgrade the firmware on existing modules. You must run LFU to revise the firmware on the CIXCD module. LFU is on the Alpha AXP Systems Firmware Update CD-ROM.

To boot LFU from the RRD42 compact disk drive, use the **show device** command to find the boot information and then boot LFU.

```
P00>>> show device kzmsa*
polling for units on kzmsa0, slot 1, xmi0...
dka100.1.0.1.0      dka100          RRD42
P00>>> boot dka100.1.0.1.0 -flags 0,80
      . . .
Bootfile: [DEC7000]AXP7000_Vnn.APB
          # Or [DEC10000]AXP7000_Vnn.APB
```

where *Vnn* is the LFU version number (such as V05). The correct file name for this version can be obtained from the Alpha AXP Systems Firmware Release Notes, released with this particular version of the CD-ROM.

To boot LFU from the InfoServer, enter the following:

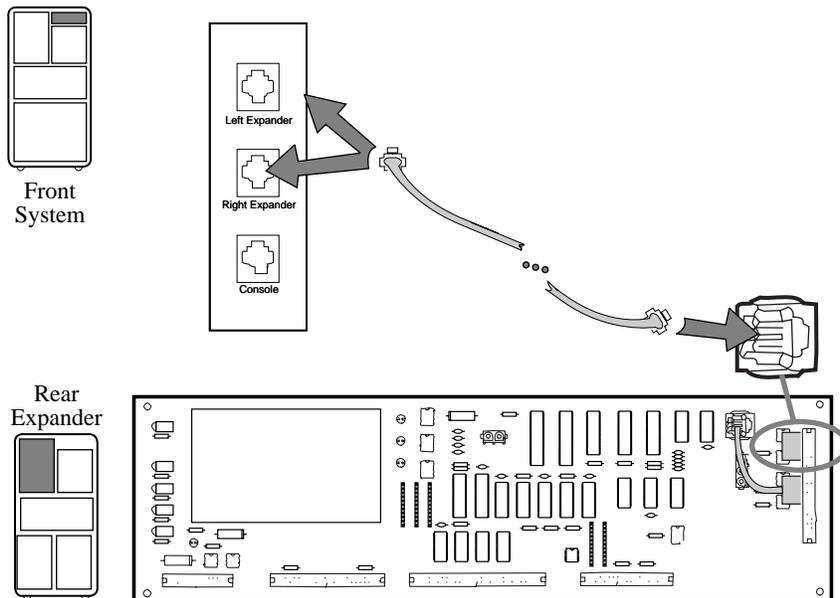
```
P00>>> boot exa0 -file APB_015 -flags 0,80
      . . .
Bootfile: [DEC7000]AXP7000_Vnn.APB
          # Or [DEC10000]AXP7000_Vnn.APB
```

1. Enter 3 to select Choose Service from the Function menu.
2. Enter 1, to select Find Services from the Option menu.
3. Enter the number of the service with the volume label name (Update).
4. LFU starts, displays a summary of its commands, and issues its prompt (Function?).

2.2 Expander Cabinet Installation — Connect the Power Control Cable

Connect the power control cable from the control panel on the system cabinet to the filter board, which is connected to the cabinet control logic (CCL) module in the expander cabinet.

Figure 2-2 Power Control Cable

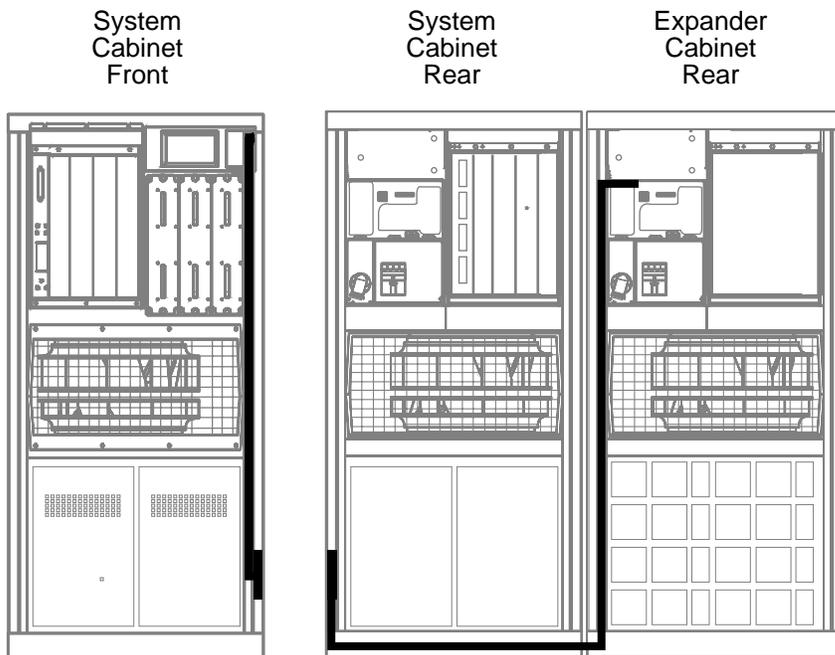


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WARNING: Before beginning this procedure, power off each cabinet at the circuit breaker.

1. Plug one end of the power control cable into the jack marked Left Expander, located on the top right of the system cabinet as viewed from the front. If a second expander cabinet is installed, plug another power control cable into the jack marked Right Expander.
2. Route each power control cable through a cable routing channel to the rear of the system cabinet and into the top of the expander cabinet(s) as illustrated in Figure 2-3.
3. Remove the CCL module access plate on each expander cabinet. The access plate is located in the upper left (as viewed from the rear) of the expander cabinet. Remove the plate by removing the three screws.
4. Plug the other end of each power control cable into jack J1 located on the filter board at the upper right of the CCL module (see Figure 2-2).
5. Replace each CCL module access plate by replacing the three screws.

Figure 2-3 Power Control Cable Routing



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Section 3

User Information

The following pages give information not available when the user documents were published.

When the books were published, the DEC 7000 and DEC 10000 systems had their own CD-ROM with firmware update code for those systems. Now there is a CD-ROM that includes firmware update code for *all* the Alpha systems. To run LFU, the directory and file name for the DEC 7000 and 10000 systems must be given.

Topics discussed include:

- Booting examples from the RRD42 and from an InfoServer
- Booting LFU from an InfoServer
- Console command language enhancements
 - Clear SEEPROM
 - Repeat
 - Set System_Variant
 - Set SEEPROM
 - Show SEEPROM

3.1 Booting OpenVMS AXP from an RRD42

This section shows a sample boot of OpenVMS AXP from the RRD42 CD drive for DEC 7000 systems. The first step is issuing the show device command to determine the location of the RRD42.

Example 3-1 RRD42 OpenVMS AXP Boot

```
>>> show device ❶
polling for units on kdm700, slot 1, xmi0...
dua2.2.0.1.0      R2TDYC$DUA2   RF73
dua3.3.0.1.0      R2TDYC$DUA3   RF73
polling for units on kzmsa0, slot 2, xmi0...
dka100.1.0.2.0    dka100        RRD42

>>> boot -flags 0,0 dka100.1.0.2.0 ❷
Booting... ❸
Connecting to boot device dka100.1.0.2.0
initializing HWRPB at 2000
initializing page table at 1ee000
initializing machine state
jumping to bootstrap at 1fa000
OpenVMS AXP (TM) Operating System, Version V1.5 ❹
```

Insert the compact disk that contains the OpenVMS AXP operating system into the RRD42 CD drive. Example 3-1 shows how to boot the operating system.

- ❶ **Show device** displays information about each I/O device. Polling checks the XMI bus for device configurations. The next line contains three columns. The first column contains the device type and unit number, node number, device channel number, XMI node number, and I/O channel number, separated by periods. The second column displays the name of the device given by the device controller. The third column shows the device type.
- ❷ In the **boot** command, **-flags** indicates that additional command parameters follow, **0** is the system root of the boot device, **0** is the bootstrap option, **dk** is the device code of the boot device, **a** is the boot device controller designation, and **100** specifies the hexadecimal unit number of the boot device. The **1** is the node number, **0** is the channel number, **2** is the XMI node number, and **0** is the I/O channel number.
- ❸ The system boots standalone backup from the RRD42.
- ❹ The operating system banner appears.

For more information:

OpenVMS AXP Version 1.5 Upgrade and Installation Manual

3.2 Booting OpenVMS AXP from an InfoServer

This section shows a sample OpenVMS AXP boot from an InfoServer using the Ethernet. First issue the show network command, followed by the boot command. After the load is complete, choose the service for the operating system.

Example 3-2 InfoServer OpenVMS AXP Boot

```
>>> show network ❶
polling for units on demna0, slot 3, xmi0...
exa0.0.0.3.0 08-00-2B-0B-BB-ED
>>> boot exa0.0.0.3.0 -file APB_015 -flags 0,0 ❷
Initializing...
F E D C B A 9 8 7 6 5 4 3 2 1 0 NODE # ❸
      A M . . . . . P P TYP
      O + . . . . . + + ST1
      . . . . . E B BPD
      O + . . . . . + + ST2
      . . . . . E B BPD
      + + . . . . . + + ST3
      . . . . . E B BPD
      . . . . . + . + . . . C0 XMI +
      . . . . . . . . . . . C1
      . . . . . . . . . . . C2
      . . . . . . . . . . . C3
      . A0 . . . . . ILV
      .128 . . . . . 128MB
Firmware Rev=V2.3-3276[A52] SROM Rev=V1.0-0 SYS SN=GA01234567
Booting...
Connecting to boot device exa0
Created boot device: exa0.0.0.3.0

Requesting MOP Assistance Volunteer.....
MOP Assistance Volunteer found.
Loading...
.....
Load complete! ❹
```

Insert the compact disk that contains the OpenVMS AXP operating system into an InfoServer. Example 3-2 shows how to begin the boot process.

- ❶ **Show network** displays information about network controllers. Polling checks the XMI bus for device configurations. **Show network** includes information such as the console device name of the network device with path information (exa0.0.0.3.0) and the Ethernet controller's hardware address in hex (08-00-2B-0B-BB-ED).
- ❷ The **boot** command specifies the console device name of the network device **exa0**, followed by the initial system load file name **APB_015**. To boot over the FDDI, the device mnemonic is **fx** rather than **ex**.
- ❸ System self-test results are displayed if the environment variable **boot_reset** is set **on**.
- ❹ After the load is complete, the Network Initial System Load Function menu is displayed. From the services listed, you choose the service for the operating system CD-ROM.

For more information:

***Console Reference Manual
OpenVMS AXP Version 1.5 Upgrade and Installation Manual***

3.3 Booting LFU from an InfoServer

You use LFU to update module firmware to the version needed. Make sure the Alpha AXP Systems Firmware Update CD-ROM is mounted in an InfoServer.

Example 3-3 InfoServer LFU Boot

```
>>> boot exa0 -file APB_015 -flags 0,80
Booting...
Connecting to boot device exa0
Created boot device: exa0.0.0.3.0

Requesting MOP Assistance Volunteer.....
MOP Assistance Volunteer found.
Loading...
.....
Load complete!
Image size: 2144256
Host name: GALL
Host address: aa-00-04-00-0c-74

bootstrap code read in
base = 127e00, start = 0
boot device name = exa0.0.0.3.0
boot flags 0,0
boot device type = 69
controller ID = a
unit number = 0
node ID = 0
channel = 0
slot = 14
hose = 2
jumping to bootstrap at 127e00
Bootfile: [DEC7000]AXP7000_Vnn.APB

Network Initial System Load Function
Version 1.1

FUNCTION          FUNCTION
ID                -
1                 -   Display Menu
2                 -   Help
3                 -   Choose Service
4                 -   Select Options
5                 -   Stop

Enter a function ID value: 3
```

```
OPTION          OPTION
  ID
  1      -      Find Services
  2      -      Enter known Service Name
Enter an Option ID value: 1
```

Working

Servers found:: 3

```
Service Name Format:
  Service Number
  Service Name
  Server Name
  Ethernet ID
```

```
#1
INFO4$RZ57
INFO4
08-00-2B-26-A6-98
#2
6000_DIAG_H
INFO3
08-00-2B-16-04-D4
#3
UPDATE
OPUS_ESS
08-00-2B-18-A9-75
```

Enter a Service Number or <CR> for more: 3

```
Copyright Digital Equipment Corporation
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All Rights Reserved.
```

Loadable Environment Rev: V2.3-3359[A33B1] March 22 1993 12:58:47

```
***** Loadable Firmware Update Utility *****
Version 8.3 18-Mar-1993
```

For more information on LFU:

Operations Manual, Appendix C
System Service Manual, Chapter 3

3.4 Clear SEEPROM

The SEEPROM is a 2-Kbyte EEPROM on MS7AA, IOP, DWLMA, and DWLAA modules. These SEEPROMs are accessed using a serial protocol, which may take a minute or two for read and write accesses. The SEEPROMs are used to log diagnostic or operating system data and to record module serial numbers. The `clear seeprom` command clears a specific area in the module's SEEPROM.

Example 3-4 Clear SEEPROM Command

```
P00>>> clear seeprom diag_tdd iop0 # Clears the contents
P00>>>                               # of the DIAG_TDD area
                                       # of the IOP module.
```

The `clear seeprom` command syntax is:

cl[ear] see[prom] <option> <device>

where **option** is **diag_tdd** (test-directed diagnostic area), **diag_sdd** (symptom-directed diagnostic area), or **symptom** (operating system-specific symptom log), and **device** is **iopn** (serial EEPROM area on module *iopn*), **ms7aan** (serial EEPROM area on module *ms7aan*), **dwlaan** (serial EEPROM area on module *dwlaan*), or **dwlman** (serial EEPROM area on module *dwlman*).

3.5 Repeat

The repeat command reexecutes the indicated command the number of times specified.

Example 3-5 Repeat Command

```
>>> repeat 5 ex seeprom:0/iop0      # Perform the specified
seeprom: 00000C00 AA5500FF          # command five times.
seeprom: 00000C00 AA5500FF
seeprom: 00000C00 AA5500FF
seeprom: 00000C00 AA5500FF
seeprom: 00000C00 AA5500FF
>>>
```

The **repeat** command syntax is:

r[repeat] [count] [<command>]

where **count** specifies the number of times to repeat the command and **<command>** is the console command to repeat. If no count is entered, the command will repeat until it is halted by Ctrl/C.

3.6 Set System_Variant

The default value for the system_variant environment variable is 0 (for a DEC 7000). After issuing a build EEPROM command on a DEC 10000 system, you must set the system_variant environment variable to a value of 1.

Example 3-6 Set System_Variant Command

```
P00>>> set system_variant 1      # Set system variant
                                     # to 1 for DEC 10000.
P00>>>
```

The **set system_variant** command syntax is:

se[t] system_variant <value>

where **value** is **0** for a DEC 7000 (default) or **1** for a DEC 10000.

3.7 Set SEEPROM

The set seeprom command allows you to modify the selected serial EEPROM area.

Example 3-7 Set SEEPROM Command

```
>>> set seeprom man iop0           # Enter module serial
please wait ~1 min, reading iop0   # number and unified
Module Serial Number> SG01234567   # part number.
Module Unified 2-5-2.4 Part Number> 19-12345-01.M001

please wait ~1 min, writing iop0
>>>
```

The **set seeprom** command syntax is:

se[t] see[prom] <option> <device>

where **option** is **diag_tdd** (test-directed diagnostic area), **diag_sdd** (symptom-directed diagnostic area), **manufacturing** (module's serial number area), **field** (content of field area), or **symptom** (operating system-specific symptom log), and **device** is **iopn** (serial EEPROM area on module *iopn*), **ms7aan** (serial EEPROM area on module *ms7aan*), **dwlaan** (serial EEPROM area on module *dwlaan*), or **dwlman** (serial EEPROM area on module *dwlman*).

3.8 Show SEEPROM

The show seeprom command allows you to display information stored in a SEEPROM on a specified module.

Example 3-8 Show SEEPROM Command

```
>>> show seeprom diag_sdd iop0          # Show diag_sdd
please wait ~1 min, reading iop0       # information.
```

```
Diagnostic SDD Logging is enabled
Logging Control Field value = 0000
Actions logged = 0
>>>
```

The **show seeprom** command syntax is:

sh[ow] see[prom] <option> <device>

where **option** is **diag_tdd** (test-directed diagnostic information), **diag_sdd** (symptom-directed diagnostic information), **manufacturing** (module serial number), **field** (field service history), or **symptom** (operating system-specific symptom log), and **device** is **iopn** (serial EEPROM area on module iopn), **ms7aan** (serial EEPROM area on module ms7aan), **dwlaan** (serial EEPROM area on module dwlaan), or **dwlman** (serial EEPROM area on module dwlman).

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