DIGITAL AlphaServer 400

Firmware Update Procedures

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Preface

Purpose of This Guide

This guide is intended for all managers of the AlphaServer 400 series of systems.

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

Purpose and Responsibility of the Loadable Firmware Update Utility

The Loadable Firmware Update Utility has been developed to allow the owners of existing and new DIGITAL AlphaServer 400 systems to maintain firmware on their systems. Firmware provides a number of basic functions on your system, including operating system bootstrap, configuration identification, testing and some basic input/output operations.

To assist the owner, who's responsibility it is to perform the update, a simple and user friendly interface is provided as part of the Loadable Firmware Update Utility. This program should be executed as directed by the release notes whenever new software is purchased or as directed by Digital Equipment Corporation.

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.

Tables 1 and 2 show the compatibility between the firmware revisions and revisions of OpenVMS, DIGITAL UNIX, and Windows NT.

Table 1 DIGITAL AlphaServer 400

SRM Firmware	OpenVMS	DIGITAL UNIX
V5.7-1	6.2-1h1, 6.2-1h3, 7.0	3.2f, 4.0
V6.3-2	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2f, 4.0, 4.0a, 4.0b
V6.4-1	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2g, 4.0, 4.0a, 4.0b
V6.5-1	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2g, 4.0x
V6.6	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2g, 4.0x
V6.7	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2g, 4.0x
V6.8	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2g, 4.0x
V6.9	6.2-1h1, 6.2-1h3, 7.0, 7.1	3.2g, 4.0x
V7.0	6.2-1h1, 6.2-1h3, 7.0, 7.1, 7.2	3.2g, 4.0x

Table 2 DIGITAL AlphaServer 400

ARC Firmware	Windows NT
4.49	3.51, 4.0
4.53	3.51, 4.0
4.56	3.51, 4.0
4.57	3.51, 4.0
4.58	3.51, 4.0

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.

Document Title	Language	Part Number
AlphaServer 400 User Information	English	EK-PCSVA-UI
	Japanese	EK-PCSVJ-UI

Document Title	Language	Part Number
AlphaServer 400 Upgrade Information	English	EK-ALPH4-UP
AlphaServer 400 Installation Information	English	EK-PCSVA-II

Reader Comments

DIGITAL welcomes your comments on this or any other manual. You can send your comments to DIGITAL at the following address:

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1

AlphaServer 400 Firmware Update Procedure

This chapter explains how to update the AlphaServer 400 firmware. Topics are as follows:

- Upgrading DIGITAL UNIX or OpenVMS system from a CD
- Upgrading a Windows NT system from a CD

1.1 Updating System Firmware

1.1.1 System Firmware

The DIGITAL AlphaServer 400 system contains four flash ROMs, two with ARC console firmware for the Windows NT operating system and two with SRM console firmware for the DIGITAL UNIX and OpenVMS operating systems. See Table 1 and Table 2 for compatible firmware and operating system versions.

1.1.2 Update Utility

Use the update utility to update your ARC and SRM firmware. The update utility contains three images: the update utility itself, the SRM image, and the ARC image.

1.1.3 Flash Enable Jumper

Before you can update your system firmware, the flash ROM enable jumper must be in the write-enabled position. This is the default position. See the DIGITAL AlphaServer 400 User Information Documents for details.

1.2 Updating an OpenVMS or DIGITAL UNIX System

The procedure to update firmware using the Alpha Firmware CD from the SRM console is shown below.

Table 1–1 Update Firmware from the SRM Console

Update Steps		
Insert Alpha Firmware CD into CD-ROM drive	>>> show device	Find the CD-ROM device ID e.g dka400
Boot the Alpha Firmware CD	>>> Boot dka400	Boot code determines AlphaStation type then displays the firmware update file and a Bootfile: prompt.
Press the enter-key after the Bootfile prompt	Bootfile:	Use the default firmware update file
Using the serial port type update at the Update utility prompt	APU-> update	Update console and option firmware
Using the Graphic Terminal select Update using the cursor arrow keys	APU-> update	Update console and option firmware
Type exit after the firmware update is complate	APU->exit	Exit the APU and initialize the system

Example:

```
>>> show device
...
... dka400.1.0.1.0  DKA400      RRD43  1084
...
>>> boot dka400
(boot dka400.1.0.1.0)
block 0 of dka400.1.0.1.0 is a valid boot block
reading 989 blocks from dka400.5.0.1000.0
bootstrap code read in
base = 156000, image_start = 0, image_bytes = 7ba00
initializing HWRPB at 2000
initializing page table at 148000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

                [Release notes are displayed]
Bootfile:       [press enter-key]

        ***  AlphaServer 400 4/233 -- Firmware Update V7.0  ***

        For more information type:  HELP <Topic> or ? <Topic>
```

```
Update
Verify
List
Show
DEbug
NDebug
?
Apu->
Apu-> update
Apu-> update
APU-I ARE YOU READY TO PROGRAM (SRM  ) ROM DEVICE ? (Y/N) y
APU-I PRECHARGING (SRM  ) ROM DEVICE
APU-I ERASING (SRM  ) ROM DEVICE
APU-I PROGRAMMING (SRM  ) ROM DEVICE
APU-I VERIFY LOADED (SRM  ) ROM IMAGE
APU-I VERIFY LOADED (SRM  ) ROM IMAGE DONE
APU-I PROGRAMMING (SRM  ) ROM COMPLETED
APU-I PRECHARGING (ARC  /AlphaBIOS) ROM DEVICE
APU-I ERASING (ARC  /AlphaBIOS) ROM DEVICE
APU-I PROGRAMMING (ARC  /AlphaBIOS) ROM DEVICE
APU-I VERIFY LOADED (ARC  /AlphaBIOS) ROM IMAGE
APU-I VERIFY LOADED (ARC  /AlphaBIOS) ROM IMAGE DONE
APU-I PROGRAMMING (ARC  /AlphaBIOS) ROM COMPLETED
Apu-> exit
```

Cycle power on the system or hit the reset button

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

1.3 Updating a Windows NT system

This section describes how to update a system running the Windows NT operating system.

Caution

For this release you can NOT update the AlphaServer 400 SRM firmware via the ARC 4.41 "Install new firmware" utility. The AlphaServer 400 SRM firmware can only be updated from the SRM console (Section 1.2 in this document).

1.3.1 Step 1: Shutdown Windows NT and Powerup system

1.3.2 Step 2: Go to the Supplementary menu

This menu selection is the last choice in the `Boot Menu`.

1.3.3 Step 3: Go to the Install New Firmware selection

When selected the CDROM will be checked for the firmware update utility. This command will timeout if the proper media is not present.

1.3.4 Step 4: Perform Update and System Initialization

To complete the update procedure of your system, refer to Section 1.2, steps 5-7.

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 AlphaServer 400 series of systems to be updated (target system) must be powered on and at the console prompt (>>>).

Table 2–1 lists the steps required to update the firmware on your AlphaServer 400 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.
2	If the host is a VMS, ULTRIX, or DIGITAL UNIX system, copy the update file from the Firmware Update Utility compact disc.
3	Set up the host system.
4	Enter a network boot command from the target system.
5	Refer to Section 1.2, steps 5-7 to complete update procedure.

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_v54

Use the following path/filename in order to update an
AlphaServer 400:

$ copy dka400:[SYS0.SYSEXE]ASV400_V7_0.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

Use the following path/filename in order to update an
AlphaServer 400:

# cp /mnt/ALPHASV400/ASV400_V7_0.SYS /usr/lib/mop/filename
```

2.1.4 Step 3: Set Up Host

Execute the following when updating an AlphaServer 400 using a VMS host. You must use NCP to define the characteristics of the host and target system. You will need OPER privileges.

```
$ MCR NCP set circ CIRC_NAME state off
$ MCR NCP set circ CIRC_NAME serv enabled
$ MCR NCP set circ CIRC_NAME state on
```

Note

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

Execute the following only when updating an AlphaServer 400 series system using an ULTRIX host. Please note that MOP is not supported under Digital UNIX.

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
```

2.1.5 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 command starts a boot process:

```
>>> boot ewa0 -fi filename
```

Note

The filename must be entered exactly as displayed by the ULTRIX host.

After the boot process completes, the Firmware Update Utility menu is displayed. Note the Update Utility prompt (APU->). The following is an example of booting the AlphaServer 400 update utility.

```
bootstrap code read in
base = 11e000, image_start = 0, image_bytes = ea800
initializing HWRPB at 2000
initializing page table at 110000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.....ea.e9.e8.e7.e6.e5.
7.0-1, built on May 15 1998 at 15:05:15
>>>Execute Update Sequence
Update Script Complete
(boot pmem:180000 -file armen2.sys -flags 0,0)
bootstrap code read in
base = 180000, image_start = 0, image_bytes = 800000
initializing HWRPB at 2000
initializing page table at 7ee000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
        ***  AlphaServer 400 4/233 -- Firmware Update CD_54 ***

        For more information type:  HELP <Topic> or ? <Topic>

Update
Verify
List
Show
DEbug
NDebug
?
```

2.1.6 Step 5: Perform Update

To complete the update procedure of your system, refer to Section 1.2, steps 5-7.

2.2 BOOTP Network Upgrade

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=ASV400_V7_0.EXE: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/ALPHASV400/ASV400_V7_0.EXE;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

Prior to entering the >>> bootp ewao command, the user must perform the generic bootp setup as described in Section 4.2, SRM Firmware Limitations.

2.2.5 Step 5: Perform Update and System Initialization

To complete the update procedure of your system, refer to Section 1.2, steps 5-7.

2.3 InfoServer Upgrade

Be certain to:

- Insert the compact disc into a CD-ROM reader that is connected to the InfoServer.
- The InfoServer kernel must be at a minimum revision of 2.2 and MOP must be enabled on the InfoServer.

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.

```
To update an AlphaServer 400 enter the following:

>>> boot ewa0 -fi ASV400_V7_0


The following is an example of updating an AlphaServer 400:

bootstrap code read in
base = 11e000, image_start = 0, image_bytes = ea800
initializing HWRPB at 2000
initializing page table at 110000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.
ef.df.ee.ed.ec.f4.eb.....ea.e9.e8.e7.e6.e5.
7.0-1, built on May 15 1998 at 15:05:15
>>>Execute Update Sequence
Update Script Complete
(boot pmem:180000 -file armen2.sys -flags 0,0)
bootstrap code read in
base = 180000, image_start = 0, image_bytes = 800000
initializing HWRPB at 2000
initializing page table at 7ee000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
        ***  AlphaServer 400 4/233 -- Firmware Update CD_52 ***

        For more information type:  HELP <Topic> or ? <Topic>

Update
Verify
List
Show
DEbug
NDebug
?
Apu->
```

2.3.2 Step 2: Perform Update and System Initialization

To complete the update procedure of your system, refer to Section 1.2, steps 5-7.

3

PCI Options Update Utility Procedures

This chapter explains how to update the firmware in PCI options that contain flash ROMs. The topics are as follows:

- Updating the PCI option firmware
- Using the PCI Update help commands

Note

Some modules require an update jumper be in place before the flash ROM can be updated. Refer to the installation procedure supplied with the option.

Caution

It is important that you follow the steps for updating the system firmware carefully. Failure to perform the update procedure correctly may render your option inoperable.

3.1 Firmware Update Steps

Your option can be updated using two methods:

1. Booting the Update Utility from a CD-ROM drive
2. Booting the Update Utility from the network

If you plan to use the network procedure, go to Section 3.2.

3.1.1 Disk Upgrade

Table 3–1 indicates the steps required to update the firmware on your PCI option.

Table 3–1 Procedure for Updating System Firmware (Method 1)

Step	Description
1	Use the `show device` command to determine the device number of the compact disc drive on your system.
2	Boot your system from the Firmware Update Utility disc.

3.1.1.1 Step 1: Determine Device Number for the CD-ROM Drive

To run the Firmware Update Utility, you need to boot your system from the compact disc drive and the system must be in console mode. To do this, you need the device number of the disc drive.

To obtain the device number of the CD-ROM drive, enter a `show device` command at the console prompt and press the Return key as shown in Figure 3–1. A list of all device numbers on your system is displayed in the BOOTDEV column. Check the DEVNAM column for the device names.

Figure 3–1 The show device Display

```
>>>  show device Return
  BOOTDEV    ADDR      DEVTYPE    NUMBYTES    RM/FX   WP  DEVNAM   REV
  -------    ----      -------    --------    -----   --  ------   ---
  ESA0       08-00-2B-12-00-9C
  DKA100     A/1/0     DISK       426.25MB    FX          RZ25     0700
  DKA400     A/4/0     RODISK       .....     RM      WP  RRD42    4.3d
  ..HostID.. A/7       INITR
  DKB400     B/4/0     RODISK       .....     RM      WP  RRD43    0064
  ..HostID.. B/7       INITR
```

In Figure 3–1, the device number of the RRD42 drive is DKA400 and the RRD43 drive is DKB400. You would use either device number to boot your system. For more information about the `show device` command, see the owner's guide for your system.

3.1.1.2 Step 2: Boot from the Firmware Update Utility Compact Disc

To start the Firmware Update Utility, type the `boot` command, flags, and device number, then press the Return key.

You will see a display similar to the following as your system starts the boot process:

```
>>>  boot -fl 0,A0 dka400 Return
INIT-S-CPU...
AUDIT_CHECKSUM_GOOD
AUDIT_LOAD_BEGINS
AUDIT_LOAD_DONE
```

The Firmware Update Utility will then prompt you for the name of the boot file that you want to boot, as follows:

```
BOOTFILE:
```

Enter the file name of the Firmware Update Utility as follows:

```
BOOTFILE:  [dir]filename Return
```

The following is the PCI update directory and filename on the CD-ROM for the AlphaServer 400:

[ALPHASV400]ASV400_PCI_V1_4.EXE

Note

The file name of the Firmware Update Utility will change with each new release. Refer to the documentation that comes with your Firmware Update Utility compact disc for the correct file name.

The following information is displayed after the boot file is loaded:

```
*** PCI Loadable Firmware Update Utility V1.4 ***
------------------------------------------------------------
 Function    Description
------------------------------------------------------------

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

UPD>
```

3.1.2 Using the PCI Update Help Commands

To enter the help display, enter `help` at the UPD-> prompt:

```
UPD-> help

        ***** PCI Loadable Firmware Update Utility V1.4 *****
------------------------------------------------------------------
 Function    Description
------------------------------------------------------------------

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

UPD>
```

The `help` command displays a brief description of the update-related commands. The `help` commands are described in the following table:

You may also get help on a selected item in the HELP table. For example to get help for UPDATE, enter `help update` at the UPD-> prompt:

```
UPD->help update

Update a particular device with LFU's firmware.
   The command format is: UPDATE [<device>] [-PATH <filename>]
   For example:

           update *
       or  update

   Will update all LFU supported devices found in this system

           update io

   Will update the device named IO
   Use the LIST command to see the supported LFU devices

   You can optionally update a device with different firmware than
   defaulted to by LFU, by using the -PATH switch.
   For example:

           update io -path mopdl:new_firm/eza0

   Will update the device named IO with firmware NEW_FIRM from the
   network.

UPD>
```

- Use the `list` command to show a list of memory-loaded images, plus a list of currently supported flash ROMs:

Enter the `list` command as shown in the following example:

```
UPD-> list
```

The following is a sample response:

```
Device          Current Revision    Filename            Update Revision
fwa0                2.46            dfpaa_fw                2.46
pka0                A09             kzpsa_fw                 A10
```

Note

Currently there are only two PCI devices supported by this PCI Update Utility. They are the PCI FDDI option (device: fwa0) and the PCI KZPSA option (device: pka0).

- Use the `update` command to update the adapter ROM, as shown in the following example:

```
UPD-> update pka0

Confirm update on:
pka0
[Y/(N)]Y

WARNING: updates may take several minutes to complete for each device.
                            DO NOT ABORT!
pka0            Updating to A10...  Verifying A10...  PASSED.

UPD>
```

- Use the `verify` command to verify the adapter ROM, as shown in the following example:

```
UPD-> verify

fwa0            Verifying 2.46...  PASSED.

pka0            Verifying A10...  PASSED.

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

3.2 Network Upgrade

The procedure to update from a network is the same procedure used for the AS 200 systems. Use the instructions in Section 2.1 MOP Network Upgrade and Section 2.2 BOOTP Network Upgrade to update the firmware in your PCI option. The following information will detail any differences between procedures.

The VMS copy command for the AlphaServer 400 is:

```
$ copy dka400:[SYS0.SYSEXE]ASV400_PCI_V1_4.SYS mom$load:
```

The ULTRIX/ Digital UNIX copy command for the AlphaServer 400 is:

```
#  cp /mnt/ALPHASV400/ASV400_PCI_V1_4.SYS /usr/lib/mop/filename
```

The correct path for the PCI Update Utility for the AlphaServer 400 is:

```
/mnt/ALPHASV400/ASV400_PCI_V1_4.EXE
```

4

AlphaServer 400 Series Firmware Information

This section describes new features and limitations of the present firmware upgrade.

4.1 New Features

- Added support for HSG forced failover
- Added SRM2ctrl env var

4.1.1 Identifying your AlphaServer system's current ISA bus configuration

1. Shut down the operating system.
2. From the SRM console prompt, type:

```
>>>show config
```

The system responds with a display similar to the following:

```
Firmware
SRM Console:   V7.0-1
ARC Console:   4.57

Serial ROM:    V3.4
Diag ROM:      V1.7

Processor
DECchip (tm) 21064-2    166Mhz 512KB Cache

MEMORY
     32 Meg of System Memory
     Bank 0 = 16 Mbytes(8 MB Per Simm) Starting at 0x0
     Bank 1 = 16 Mbytes(8 MB Per Simm) Starting at 0x1000000
     Bank 2 = No Memory Detected

PCI Bus
     Bus 00 Slot 06: NCR   810 Scsi Controller
                              pka0.7.0.6.0        SCSI Bus ID 7
                              dka0.0.0.6.0        RZ26L
                              dka400.4.0.6.0      RRD43

     Bus 00 Slot 07: Intel SIO 82378

     Bus 00 Slot 11: Digital ZLXp Graphics Controller

     Bus 00 Slot 12: Digital DE435 Network Controller
                                   ewa0.0.0.12.0       08-00-2B-E2-1C-25
```

```
ISA
Slot   Device   Name    Type        Enabled     BaseAddr   IRQ    DMA
0      0        MOUSE   Embedded    Yes           60       12
       1        KBD     Embedded    Yes           60       1
       2        COM1    Embedded    Yes           3f8      4
       3        COM2    Embedded    Yes           2f8      3
       4        LPT1    Embedded    Yes           3bc      7
       5        FLOPPY  Embedded    Yes           3f0      6      2
2
       0        PCXBJ   SingleporT  Yes           530      9      0
```

3. From the information displayed in the previous step you can see the I/O Base address (BaseAddr) and IRQ of the ISA devices that are known to the SRM console. Note that the Turbo Plus default base address (300) and IRQ (5) are available.

4. To check if there are any Turbo Plus boards installed, but not known to the console, use the EWRK3_CONFIG utility by typing:

```
>>>ewrk3_config
>>>
```

   If any Turbo Plus boards are present on your AlphaServer system, this command displays their I/O Base addresses, otherwise the prompt returns with no message as shown above.

5. The ISACFG utility is used to determine if any ISA devices are using memory. Type the isacfg command using the slot number of an ISA device from the show config command. (The slot number is a unique number used for device identification and does not relate to a physical slot number.) For example:

```
>>>isacfg -slot 2
```

   The system responds with a display similar to the following: Note that I/O base address is equal to iobase0, IRQ is equal to irq0, and Memory address is equal to membase0.

```
============================================================
handle: PCBXJ
etyp: 1
slot: 2 dev: 0
enadev: 1
totdev: 1
iobase0: 530 membase0: 8000000000000000
iobase1: 388 memlen0: 8000000000000000
iobase2: 8000000000000000 membase1: 8000000000000000
iobase3: 8000000000000000 memlen1: 8000000000000000
iobase4: 8000000000000000 membase2: 8000000000000000
iobase5: 8000000000000000 memlen2: 8000000000000000
rombase: 8000000000000000
romlen: 8000000000000000
dmamode0/chan0: 0 irq0: 9
dmamode1/chan1: 1 irq1: 80000000
dmamode2/chan2: 80000000 irq2: 80000000
dmamode3/chan3: 80000000 irq3: 80000000
============================================================
```

   Note that in the above display for the device in slot 2, the membase0 is 8000000000000000. This means memory is not being used by this device. None of the devices in slot 0 use memory, so there is no conflict if the Turbo Plus factory default memory address (d0000h) is used.

6. If there are no conflicts proceed to section II. If there are conflicts, proceed to section III.

4.1.2 Installing a Turbo Plus when there are no bus conflicts

1. If there are no conflicts with the Turbo Plus default settings and the information you gathered in the previous section, type the following SRM console command:

   ```
   >>>add_de205
   ```

   This command executes a script containing the following isacfg command:

   ```
   >>>isacfg -mk -slot 1 -dev 0 -handle DE200-LE -irq0 5 -iobase0 300
   -membase0 e0000 -memlen0 10000 -etyp 1 -enadev 1
   ```

   Notes

   The above command script assumes that slot 1 is unused. If slot 1 is used on your system, enter the above command manually and choose an unused slot number. Refer to the ISA Configuration Utility section for more information.

2. At the SRM prompt, type:

   ```
   >>>init
   ```

   This saves the changes just made to the configuration database into non-volatile RAM.

3. Install the Turbo Plus board into the system. Refer to Chapter 1 of the DEC EtherWORKS 3 Turbo Ethernet Controller User Information for instructions.

4. After the board is installed, from the SRM console prompt, type:

   ```
   >>>ewrk3_config
   found board addr=300
   ```

   The system responds with the I/O base address of the Turbo Plus board.

5. Boot the operating system.

4.1.3 Installing a Turbo Plus board where there are conflicts

You are in this section because adding your Turbo Plus board would result in conflicts among devices on the ISA bus. These conflicts could be caused by devices having the same I/O base address, IRQ, or memory address. One likely reason for conflict is that you are adding a second or third Turbo Plus board.

1. Using the I/O base address, IRQ, and memory address values that you gathered in the first section of this release note, and the list of available values for the Turbo Plus board from Appendix A of the DEC EtherWORKS 3 Turbo User Information, locate non-conflicting values. Note that IRQ11 is not available on AlphaStations.

Record the desired values here:	I/O Base address	_ _ _ _ _ _
	IRQ	_ _ _ _ _ _
	Memory Address	_ _ _ _ _ _

2. Enter the Turbo Plus data into the console database by typing:

Note

The isacfg command can be entered on multiple lines by typing a backslash at the end of the line. The up arrow can be used to recall previous commands.

```
>>>isacfg -slot 15 -irq0 10 -iobase0 320 -membase0 f0000 \
_> -mk -handle DE200-LE -etyp 1 -enadev 1 -memlen0 10000
```

Where for this example:

- The -slot number can be any unused slot number (15 in this example).
- The -irq0 value is an available IRQ (10).
- The -iobase0 value is an available I/O Base address (320h).
- The -membase0 value is an available Memory Address (f0000h).

Always enter the other parameters as shown, where:

- -mk specifies that this entry is being added to the database.
- -handle binds the name DE200-LE to the driver. The Turbo Plus board (DE205) uses the handle DE200-LE.
- -etyp specifies the type of option (1 = singleport device).
- -enadev specifies that the entry is being enabled (1).
- -memlen0 specifies the length of the memory region.

If you need to modify an existing entry, use the -mod option. For example, if the Turbo Plus IRQ was entered as 10, but should have been 15, type:

```
>>>isacfg -slot 15 -irq0 15 -mod
```

Slot 15 identifies the entry to be modified with the new value of irq0.

3. At the SRM prompt, type:

```
>>>init
```

4. If the I/O Base address (default, 300) of the Turbo Plus board is in conflict with another ISA device, use a hardstrap override to temporarily change the board's address. Table 1-1 and Figure 1-6 in the DEC EtherWORKS 3 User Information describe how to do the override.
5. Install the Turbo Plus board into the system. Refer to Chapter 1 of the DEC EtherWORKS 3 Turbo Ethernet Controller User Information for instructions.
6. Use the EWRK3_CONFIG utility to modify the Turbo Plus board's values:

```
>>>ewrk3_config -curaddr 200 -ioaddr 320 -irq 10 -memaddr f0000
```

Where:

- -curaddr is the temporary hardstrap override I/O Base address (W1 and W2 both in).

- -ioaddr is the I/O Base address (320) that will be used when the hardstrap override is removed and was the I/O address entered as -iobase0 in step 2 of this section.
- -irq is the value of the IRQ (10) and was the same IRQ entered as -irq0 in step 2 of this section.
- -memaddr is the value of the Base memory address (f0000) and was the same address entered as -membase0 in step 2 of this section.

The system responds with the message:

```
Unit must be power cycled for these changes to take affect
```

7. Power off the system.
8. Remove the new Turbo Plus board and disable the hardstrap override by removing W1 and W2.
9. Re-insert the new Turbo Plus board, close the cover, and power on the system.
10. At the SRM prompt, type:

```
>>>ewrk3_config
found board addr=300
found board addr=320
```

The system indicates that two Turbo Plus boards were found.

If you see an error message such as:

```
*** Error (ena0), network station address ROM has a bad checksum,
```

compare the I/O Base address reported by the ewrk3_config command with the I/O address displayed by the show config command. If the ewrk3_config command reported the address you expected, return to Section III, Step 2 and modify the I/O base address (iobase0) with the isacfg command.

If the ewrk3_config command reported an address you did not expect, return to Section III, Step 6 and modify the I/O base address with the ewrk3_config command.

4.1.4 Help Screens

Help screens are available for ISACFG and EWRK3_CONFIG. At the SRM console prompt, type:

```
>>>help isacfg
```

or

```
>>>help ewrk3_config
```

4.1.5 EWRK3_CONFIG Command Information

EWRK3_CONFIG is a utility that sets up the DE205 on board EEPROM.

Invoking "ewrk3_config" with no parameters searches the entire address space for DE205 modules and displays the addresses of all modules found.

The parameters for ewrk3_config command are:

none	Find all DE205 boards and display their I/O Base address
-curaddr	The current hex I/O base address of the module being changed

-ioaddr	The hex I/O base address to change the current module
-irq	The decimal IRQ value (valid values are 5, 10 or 15)
-fbus	Fast bus enable
-ena16	16 bit bus enable
-memaddr	Base memory address the board should respond to
-bufsize	Buffer size of the memory address (2K, 32K or 64K)
-swflag	Software flag field
-netmgt	Net management field
-default	Set the board back to the default settings

4.1.6 ISA Configuration Utility

ISA devices are not capable of being probed for configuration information by the DIGITAL UNIX or OpenVMS operating systems. Therefore, you must enter ISA option information manually using the ISA configuration utility (ISACFG). You should run this utility before installing a new ISA option module on Digital AlphaServer systems running either the DIGITAL UNIX or OpenVMS operating systems.

Command Format

The syntax of the ISACFG command is:

```
isacfg [-slot <slot#>] [-dev <device#>]
[-all|-rm|-mk|-mod] [-<field> <value>] . . .
```

Command Option	Description
-all	Shows the entire configuration table. Overrides all other commands.
-dev <dev#>	Optional; defaults to 0 if not entered. On a multifunction or multiport adapter, this specifies the device on the adapter.
-dmachan{0-3} <#>	Allows you to specify up to four DMA channels for the device.
-dmamode{0-3} <#>	Allows you to specify the DMA type for -dmachan{0-3}. DMA modes are: 1 - Block 2 - Demand 4 - Single 8 - Cascade
-enadev <#>	Allows you to specify whether an entry is enabled or disabled. Disabled devices are not used in resource allocation calculations. The possible values are: 0 - No (disabled) 1 - Yes (enabled)
-etyp <#>	Defines an entry type for this entry. The # sign can be: 0 - Causes the entry to be deleted 1 - Single option 2 - Embedded multiport device 3 - Multiport option device
-handle <string>	Binds a name to the driver (up to 15 characters).
-init	Initializes the configuration table to the default settings.
-iobase{0-5} <#>	Specifies up to six I/O base registers (in hexadecimal) for a particular device entry.
-irq{0-3} <#>	Allows you to assign up to four IRQ (interrupt request) channels to the device (use decimal IRQ levels).
-membase{0-2} <#>	Specifies up to three R/W ISA memory regions.
-memlen{0-2} <#>	Specifies the length corresponding to membase{0-2}.
-mk	Adds an entry into the table.
-mod	Modifies an entry in the table.
-rm	Deletes an entry from the table.

-rombase <#>	Specifies an address for ISA BIOS ext. ROM.
-romlen <#>	Specifies length of ROM.
-slot <slot#>	Allows you to enter a unique slot number for each ISA adapter. You may assign the numbers in any order. The slot number does not relate to a physical ISA adapter position. Slot 0 is reserved for the local multiport adapter.
-totdev <#>	Placeholder for you to keep track of the total number of devices, specified by the # sign, at this slot. Modify this for your own use.

4.2 SRM Firmware Limitations

- Should a boot file ‘‘pathname’’ be necessary for either MOP or TCP/IP booting, you should enclose the pathname in quotes. for example:

```
>>>boot ewa0 -file "/dir1/dir2/filename"
```

- The following secure console commands are not included in the help utility:

```
NAME
    set secure

FUNCTION
    Place the console in secure mode.

SYNOPSIS
    set secure


NAME
    set password

FUNCTION
    Set the password for the secure console function.

SYNOPSIS
    set password

 Please enter the password: <15-30 characters>
 Please enter the password again: <verify password>


NAME
    clear password

FUNCTION
    Clear the password for the secure console function.

SYNOPSIS
    clear password

 Please enter the password: <password>


NAME
    login

FUNCTION
    Login to a secure console.

SYNOPSIS
    login

 Please enter the password: <password>
```

- For this release you can NOT update the AlphaServer 400 SRM firmware via the ARC 4.41 "Install new firmware" utility. The AlphaServer 400 SRM firmware can only be updated from the SRM console (Section 1.2 in this document).