HP AlphaServer ES80

Upgrades

Order Number: EK-ES800-UP. C01

This manual is for field service engineers and self-maintenance customers installing upgrades to *HP AlphaServer* ES80 systems.

Hewlett-Packard Company

June 2004

FCC Notice

This equipment 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 digital device pursuant to Part 15 of FCC rules, which are designed to provide reasonable protection against such radio frequency interference.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Any modifications to this device—unless expressly approved by the manufacturer—can void the user’s authority to operate this equipment under part 15 of the FCC rules.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Taiwanese Notice

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這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻
干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Japanese Notice

この装置は，情報処理等電波障害自主規制協議会（VCCI）基準に基づくクラス A 情報装置です。この装置を家庭環境で使用すると電波障害を引き起こすことがあります。この場合には，使用者が適切な対策を講じるよう要求されることがあります。

Canadian Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis Canadien

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

EN55022 (CISPR 22) - Electromagnetic Interference

EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity

EN60950 (IEC950) - Product Safety

Warning!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention!

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

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Preface

Intended Audience

This manual is for service providers of HP AlphaServer ES80s who are upgrading an ES80 system.

Document Structure

This manual uses a structured documentation design. Topics are organized into small sections, usually consisting of two facing pages. Most topics begin with an abstract that provides an overview of the section, followed by an illustration or example. The facing page contains descriptions, procedures, and syntax definitions.

This manual has 4 chapters.

- **Chapter 1, Overview**, introduces you to the ES80 system, its upgrade kits and contents, and the basic steps of the upgrade procedure.
- **Chapter 2, Install and cable the drawers**, guides you through removing the side panel, installing cagenuts, brackets, and the 2P drawers for all models.. It details placement and order of IP (interprocessor), Ethernet, power cables and ground wires for connecting the new installed CP drawer(s) to the initial system.
- **Chapter 3, Configure and Troubleshoot**, completes our installation. We assign IP addresses to the newly installed components, and complete with a software check that all newly installed components are seen and operating appropriately.
- **Chapter 4, Verifying with Q-Vet,** gives you the Q-Vet installing, running, removing procedures to verify the system upgrade.

Information on the Internet

Visit the *AlphaServer* Web site for pdf and html versions of AlphaServer documentation. This site is updated as new revisions and manuals are produced. Table 1 lists some of the available documentation.

Firmware downloads are available at ftp://ftp.digital.com/pub/Digital/Alpha/firmware/index.html or at http://ftp.digital.com/pub/Digital/Alpha/firmware/index.html.
You can reach this from the external hp homepage. One URL may work more successfully, depending on firewall configurations at your customer site.

Table 1 HP AlphaServer ES80 Documentation

Title	Pdf	html
HP AlphaServer ES47/ES80/GS1280		
Site Preparation	Y	Y
Installation Information	Y	Y
User Information	Y	Y
Server Management Tutorial	--	Y
Service Manual	Y[1]	Y[1]
AlphaServer Management Station Software Installation and User's Guide	Y	Y
CLI Reference	Y	Y
HP AlphaServer ES47 Trade-up	Y[1]	Y[1]
HP AlphaServer ES80 Upgrade	Y[1]	Y[1]
SRM Console Reference	Y	Y
Technical Summary	Y	Y

[1] Available for HP field service engineers and self-maintenance customers only.

Chapter 1
Overview

The AlphaServer ES80 system forms the mid-range of the family of high-performance ES47/ES80/GS1280 server platforms designed for enterprise-level applications. The ES80 system is contained in a single cabinet. The ES80 system is built with 2P drawers; a maximum of four 2P drawers can be connected to create an 8P system with up to 32 Gbytes of memory (64 Gbytes future), up to 64 PCI/PCI-X slots, and up to eight AGP slots.

ES80 model numbers are based on the number of CPUs in a system.

A Model 2 is a one-drawer system (with 2 CPUs); a Model 4 is a two-drawer system (with 4 CPUs), a Model 6 is a three-drawer system (with 6 CPUs), and a Model 8 is a four-drawer system (with 8 CPUs).

This chapter provides an overview of the three ES80 upgrades.
Sections include:

- System components
- Upgrade steps
- Upgrade kits
- Update firmware
- Remove system power

CPU Speeds

AlphaServer ES80 Systems can use two different CPUs:

CPU Speed	Part Number
1000 MHz	3X-KN73A-xx
1150 MHz	3X-KN73C-xx

CAUTION: Only one type of CPU may run within a given hard partition. A system may run CPUs of different speeds in different partitions, as long as all the CPUs within each partition are the same.

1.1 System Components

A typical ES80 system may contain from one to four 2P drawers, AC input box(es, and a NAT box, and optional I/O drawers, storage shelves, and KVM.

Figure 1-1 Typical ES80 M8 System

1.2 Upgrade Steps

Here are the basic steps for installing these upgrades.

Table 1-1 Upgrade Steps

Step	To do	Resource
1	Check firmware levels; update to latest versions. Backup important data.	Section 1.4
2	Open your upgrade kit(s) and check contents	Tables 1-2. 1-3. & 1-4
3	Shut down applications and operating system partition(s) in an orderly fashion.	Application and operating system guides
4	Remove power from the cabinet (unplug the system from its outlet). Wait 5 minutes so that any residual power is grounded.	Section 1.5
5	Remove the side panel.	Chapter 2
6	Install brackets and 2P drawer(s).	Chapter 2
7	Cable the drawers, install bezels	Chapter 3
8	Power-up systems, create new hardware addresses, verify the installation, troubleshoot if necessary.	Chapter 3
9	Run Q-Vet.	Chapter 4

1.3 Upgrade Kits

You may install one to three of the upgrade kits, bringing an ES80 system up to a maximum of 8 processors.

Table 1-2 ES80 Upgrade Kits by Model

Model upgrade	Processor upgrade	Upgrade Kit P/N
Model 2 to Model 4	From 2 to 4 processors	3X-BA60B-AB
Model 4 to Model 6	From 4 to 6 processors	3X-BA60B-AC
Model 6 to Model 8	From 6 to 8 processors	3X-BA60B-AD

Table 1-3 ES80 Upgrade Kit Contents (3X-BA60B -AB, -AC, or -AD)

No.	Part number	Description
1	3X-BA60B-AA	2P system building block drawer with 2 power cords
2	17-05036-01	IP Cable assembly, COAX, 55 Ohm, (2)VHDM
1	74-61991-03	Bezel, CD, with opening, with logo
1	CK-BA60A-AA	ES80 rack kit (content details in Table 1-4) (brackets, cagenuts, screws, Ethernet cable)

NOTE that when ordering your ES80 Upgrade, you will be prompted to order CPU and Memory separately. The CPU and memory are installed into your 2P drawer at the factory. Your 2P drawer for your installation arrives with your CPU and memory factory-installed and tested. For more information, see the Quick Specs or the ES47/ES80/GS1280 Memory Upgrade card.

Table 1-4 ES80 Rack Kit Contents (3X-BA60B-AA)

Amt	P/N	Description
2	17-00442-03	Power cord, 2.5M long
1	17-04991-03	Ground wire, 8AWG, #10
1	17-05097-04	Ethernet cable assembly
2	74-62102-01	Plate stop bracket
1	74-62195-01	Right slide bracket
1	74-62196-01	Left slide bracket
2	74-62199-01	Clip, front, mtg
6	90-09984-18	Screws, M5 X 0.8 X 12mm long
16	90-09984-41	Screws, Phillips pan head, SEMS, 18mm
20	90-11476-01	Nut Cage
2	70-41070-01	Cable retainer
1	90-07651-00	Locking washer
1	128557-001	Screw, self-tapping, 5.5mmx12mm
10	90-07031-00	Ties for bundling cables
1	70-41166-01	Wire handle for PCI
1	90-09984-19	Screw M4 X 0.7 X 8mm long

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1.4 Update Firmware

You *must* update your system to the latest firmware levels before you power down.

Firmware downloads are available online through an ftp site and also a web address. Two sites are available, to address any firewall challenges.

Download the latest firmware from one of these two sites:
ftp://ftp.digital.com/pub/Digital/Alpha/firmware/index.html
http://ftp.digital.com/pub/Digital/Alpha/firmware/index.html

If you are adding at least one additional 2P drawer (upgrading from a Model 2 to Model 4, for example), then you MUST upgrade your firmware before you power down your system and begin the hardware upgrades. You cannot successfully upgrade the hardware without updating the firmware on your original system.

Please save all console environmental variables before power down (use **`show*`** or **`show mbm`** commands).

1.5 Remove System Power

Perform an orderly shutdown of the operating sytem.

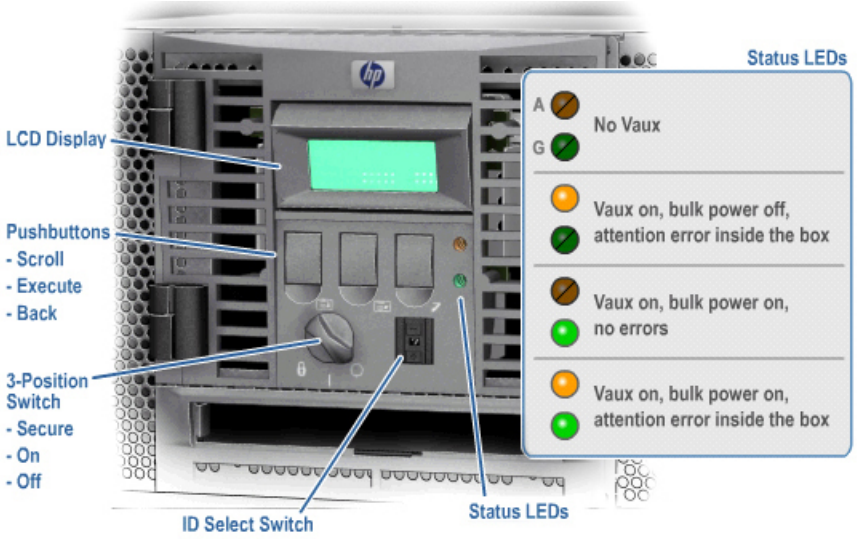
Table 1-5 OCP LEDs

Amber LED•	Green LED•	Indication
Off	Off	No Vaux
On	Off	Vaux on, bulk power off, attention error inside the box
Off	On	Vaux on, bulk power on, no errors
On	On	Vaux on, bulk power on, attention error inside the box

• The top LED is amber and the bottom LED is green.

1. Upgrade your firmware (see Section 1.4)
2. Perform your regular system maintenance. Back up all important data, systematically shut down your applications.
3. Turn off power to the cabinet at the OCP, turning the 3-position switch to 0.
4. Wait for the orderly shutdown to complete.
5. Unplug the cabinet from its power source.

Figure 1-2 Turn Off Power



Chapter 2
Install and Cable the Drawers

Next we will install the 2P drawer(s) for your upgrade. We will connect the interprocessor (IP) cables, which are used to connect the dual processor modules in the drawers. And then we connect Ethernet and power cables.

- Remove the side panel
- Install the brackets
- Install the 2P drawer(s)
- Install the IP cables
- Connect Ethernet, ground, and power cables
- Install I/O Cable Support and 2P Bezel
- Replace the side panel
- Set each drawer ID
- Restore power

2.1 Remove the Side Panel

You must remove the right side panel (as you look at the cabinet from the front). You need access to the side rails to properly ground each 2P drawer.

Figure 2–1 Remove the Side Panel

1. Open the front door. ❶
2. Pry the top panel off and lift it up.❷ Set it aside.
3. For the 34U and 41U cabinets, remove the screw at the bottom of the panel (front and rear). ❸

   For the 42U cabinets, use the door lock to unlock the side panel at the bottom.
4. Starting at the bottom, pry the side panel away from the cabinet
5. Lift the side panel out and up, and remove it. ❹

2.2 Install the Brackets

Install the brackets that will hold the new 2P drawer.

Figure 2–2 Installing the Brackets

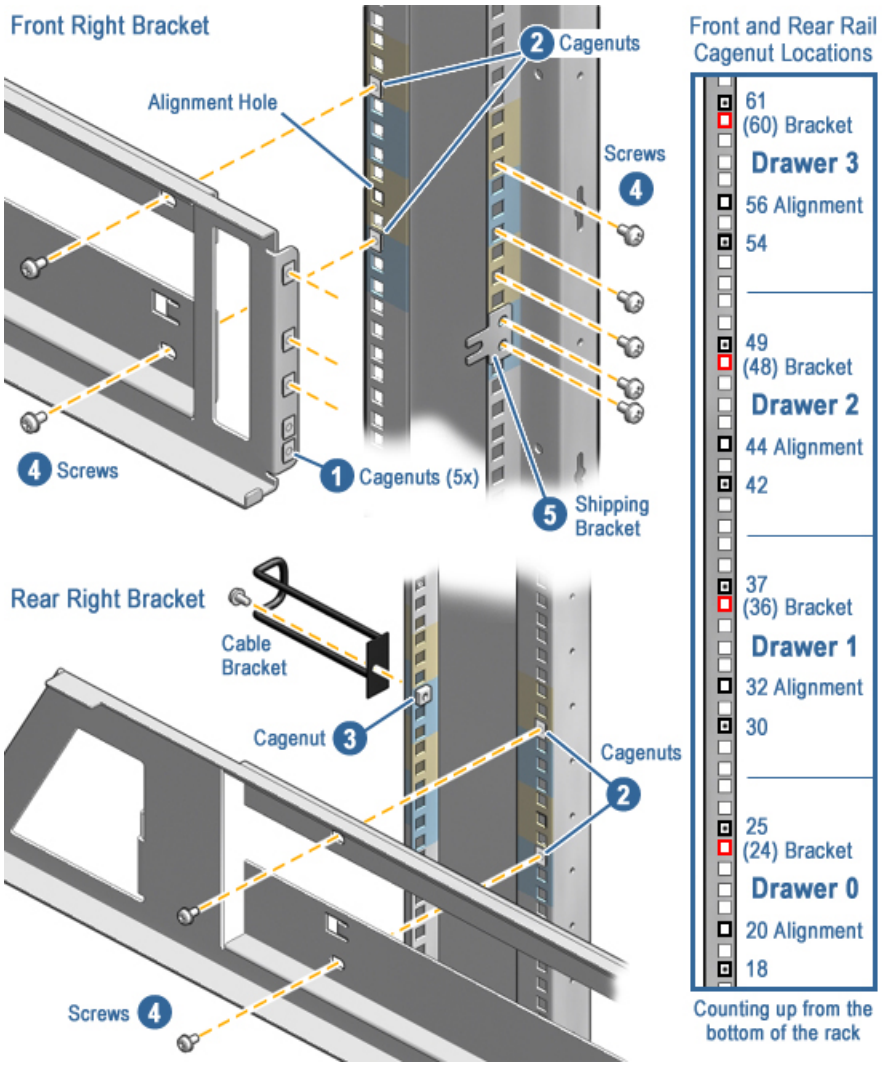


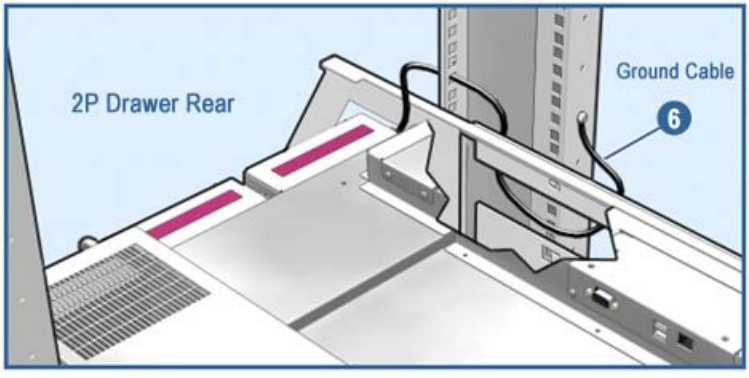
Table 2–1 Recommended Bracket Alignment for 2P Drawers

Drawer	Bracket	Cagenuts	Alignment
0	24	18, 20, 25	20
1	36	30, 32, 37	32
2	48	42, 44, 49	48
3	60	54, 56, 61	60

You have powered-down the system and opened the cabinet as described in Chapter 1. Install the brackets in the cabinet as follows.

1. Install cagenuts (5) on each 2P drawer bracket (or c-channel) ❶.
2. Install cagenuts (8) on front and rear vertical rails ❷. Figure 2–2shows the proper U locations for each 2P drawer.
3. Install cagenuts (2) on the rear vertical rails to mount the cable brackets ❸.
4. Install each 2P drawer bracket using M6 screws ❹.
5. At the front of the cabinet, attach a shipping bracket using two M6 screws to each vertical rail ❺.
6. Route the ground cable through the vertical rail (see Figure 2–3). Using a star washer, terminal lug, and self-tapping screw, attach the cable to the rear surface of the vertical rail ❻. You will attach the other end to the drawer in Section 2.5, step 2.

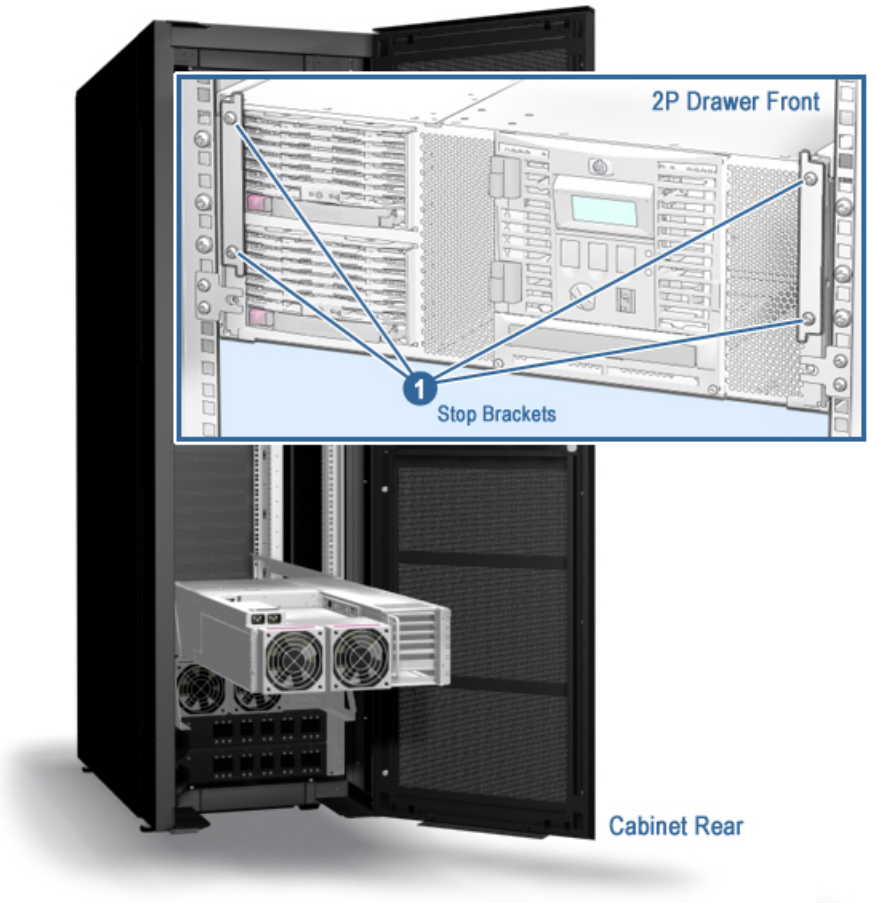
Figure 2–3 Attaching the Ground Wire



2.3 Install the 2P Drawer(s)

Slide each 2P drawer into the cabinet, using at least two people or lift equipment.

Figure 2–4 Installing the 2P Drawer



CAUTION:

At least two people are required to lift and install the 2P drawer in the cabinet. When installing drawers towards the top of the cabinet, use lift equipment.

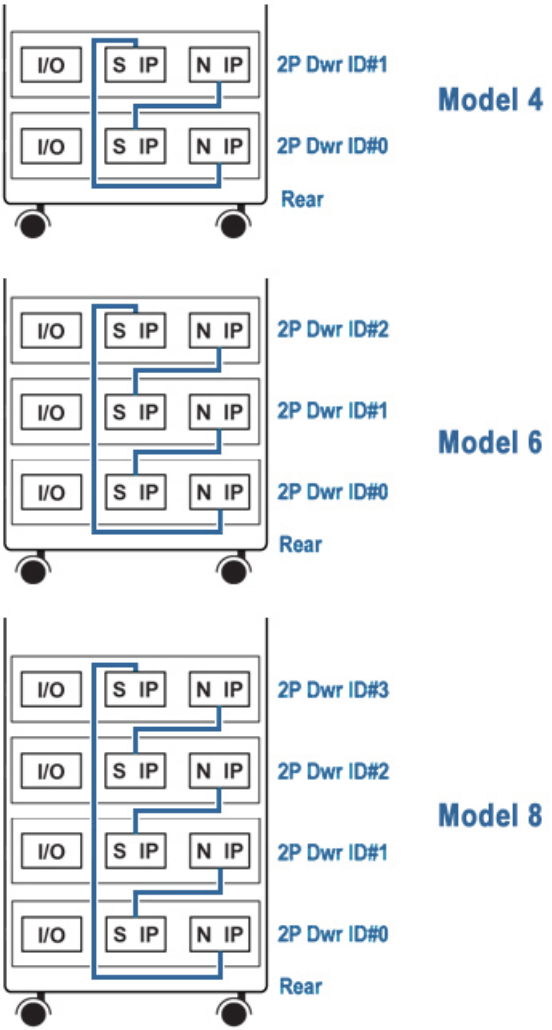
The approximate weight of a 2P drawer is 100 pounds.

1. At the rear of the cabinet, lift and rest the front of the 2P drawer onto the brackets and carefully slide it to the front of the cabinet.
2. At the front of the cabinet, install the safety stop bracket directly into the installed drawer front ❶. Using two M4 screws, tighten the safety stop bracket into the two holes on each side of the drawer.

2.4 Install the IP Cables

Always cable the north port of an upper 2P drawer to the south port of the 2P drawer immediately below. And cable the north port of the bottom 2P drawer to the south port of the uppermost drawer.

Figure 2–5 Installing the IP Cables



Caution: Have only one drawer pulled out at any given time, to maintain cabinet stability.

1. From the rear of the cabinet, slide out the newly installed 2P drawer ID#1.
   - Remove the North and South cable covers from drawer ID#1 and slide it back into the cabinet.
   - Slide out drawer ID#0 below.
   - Cable the north port of drawer ID#0 to the south port of drawer ID#1.

   If you are upgrading to a 4P system, go directly to step 4.
2. Slide out the newly installed 2P drawer ID#2.
   - Remove the North and South cable covers from drawer ID#2 and slide it back into the cabinet.
   - Slide out drawer ID#1 below.
- Cable the north port of drawer ID#1 to the south port of drawer ID#2.

   If you are upgrading to a 6P system, go directly to step 4.
3. Slide out the newly installed 2P drawer ID#3.
   - Remove the North and South cable covers from drawer ID#3 and slide it back into the cabinet.
   - Slide out drawer ID#2 below.
- Cable the north port of drawer ID#2 to the south port of drawer ID#3.

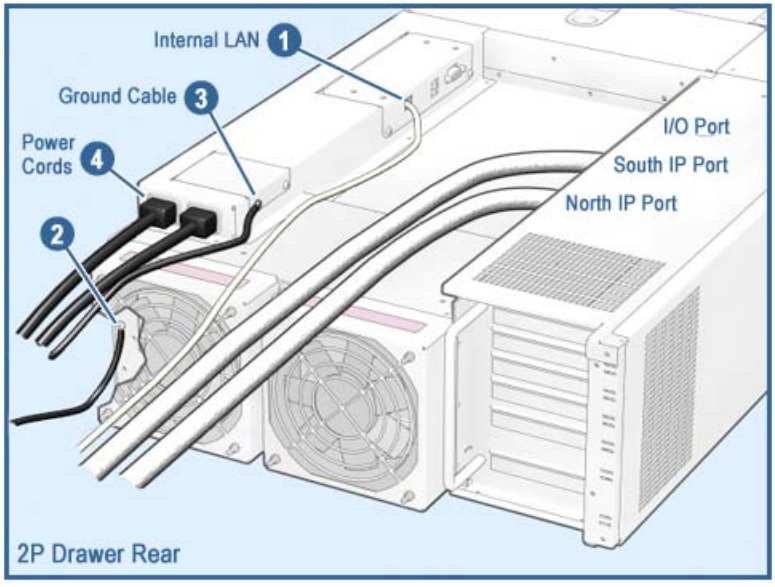
   If you are upgrading to an 8P system, continue to step 4.
4. Cable the north port of drawer ID#0 to the south port of your topmost drawer.

Upgrading to	Topmost drawer
4P system	ID#1
6P	ID#2
8P	ID#3

2.5 Connect Internal LAN, Ground, and Power Cables

After installing the IP cables, plug the Internal LAN cable into the HUB. Connect the ground cable. Then install the power cables to the PDU.

Figure 2–6 Cabling the Drawer



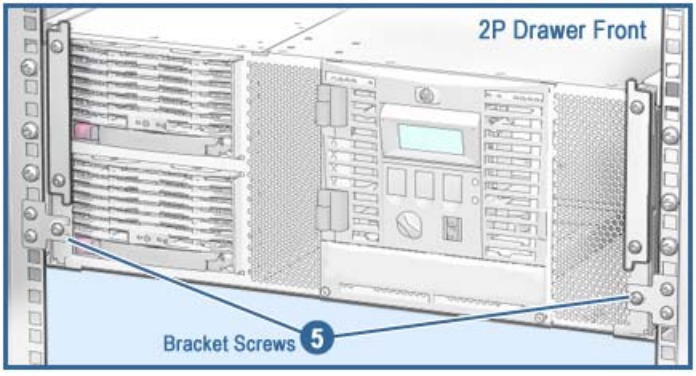
Note: Create a proper service loop. Allow enough Internal LAN and power cable to enable full extension when the drawer is pulled out, for service.

1. Plug the internal LAN cable into drawer ID#1 ❶ and route the cable up the right vertical rail to the HUB. Connect the cable to the HUB.
2. Secure the ground cable ❷.
   For earlier models, secure the ground cable at ❸.

   In Section 2.2, you threaded the other end of the ground cable up through the hole of the left rear rail post, around the rail and secured on the other side of the rail. See Figure 2–3 for details.
3. Install the two power cords into the drawer❸ and plug them into the cabinet's power distribution unit (PDU).

   If the cabinet has a second PDU installed for power redundancy, then plug each cord into separate PDUs, to configure power redundancy to this newly installed drawer.
4. Use a tie wrap to secure the power and internal LAN cables to the drawer.
5. Slide the drawer in.
6. Install the third screw to secure shipping brackets to drawer ❹.
7. Install the drawer-stop brackets (❶ in Figure 2–7 below).

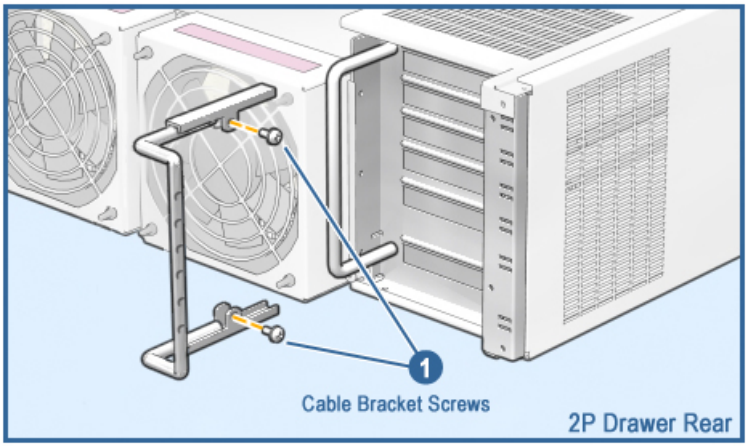
Figure 2–7 Installing Drawer-stop Brackets



2.6 Install I/O Cable Support

Over the handle on the 2P drawer, install an extension bracket to support the I/O cables. Tie wrap the cables to the bracket.

Figure 2–8 Install I/O Cable Support



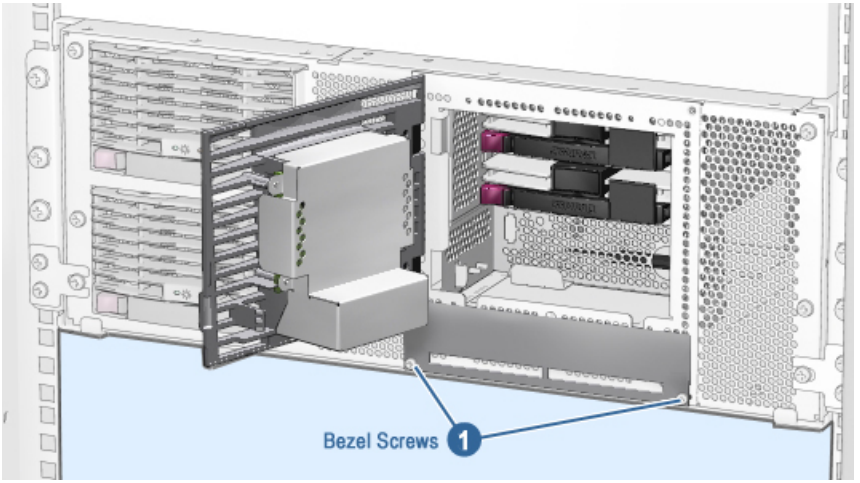
Working from the rear of the cabinet:

1. Find the black I/O cable extension bracket.
2. Slip the bracket over the handle on the rear of each 2P drawer.
3. Secure the bracket by tightening it with 2 screws. ❶
4. Gather the I/O cables and tie wrap them onto the extension bracket.

2.7 Install the Bezel

The new 2P drawer comes without a CD-ROM. The bezel is installed to shield and protect this cavity.

Figure 2–9 Install the Bezel



Move to the front of the 2P drawer.

1. Open the operator control panel (OCP) door.
2. Remove the 2 screws holding the OCP door.
3. Add the new plastic bezel and tighten the 2 screws❶.

2.8 Replace the Side Panel

Working from the side of the system, return the side panel to the cabinet. Figure 2–10 shows a full upgrade to an 8P system. If you have a 4P or 6P, your system will have fewer drawers.

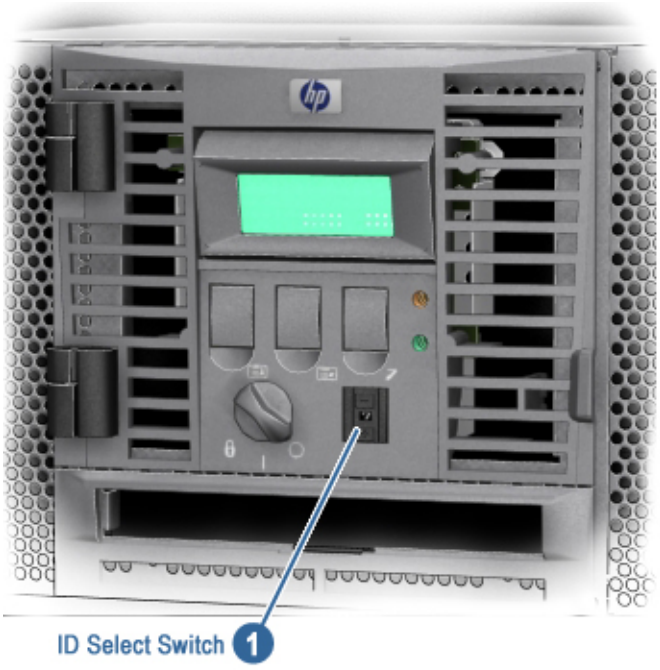
Figure 2–10 Replacing the Side Panel

1. Hook the top of the side panel onto the cabinet. Working top down, press the side panel onto the cabinet frame. Push the bottom in tightly.
2. Insert and tighten the screws at the bottom of the panel (front and rear). For 42U cabinets, lock the side panels to the frame.
3. Press the top panel back onto the cabinet frame.
4. Close the cabinet doors.

2.9 Set Each Drawer ID

Each newly installed 2P drawer needs to have a unique ID set on its OCP. Set the ID numbers for each drawer on their OCP. Check your PCI drawer's IDs, so that you do not create duplicates.

Figure 2–11 Setting Drawer ID

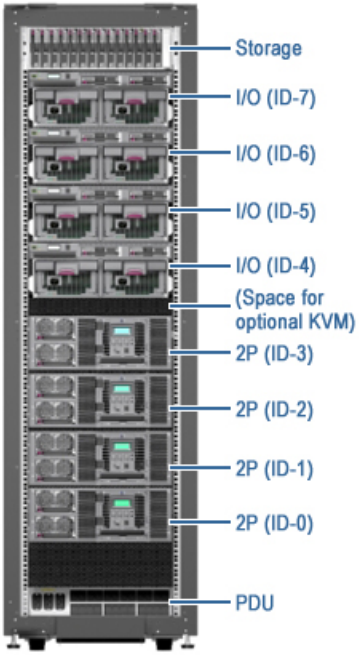


Each component must have its ID set according to its position in the cabinet.
If, for example, you have no PCI in the position associated with ID-6, you do not assign that ID to the drawer above it. The drawer above retains ID-7 to indicate its physical position in the cabinet, and the drawer below is ID-5
(See Table 2–2).

Table 2–2 Drawer IDs

Position	Set drawer ID	Model
System drawer, bottom	0	Model 2
System drawer, 2nd from bottom	1	Model 4
System drawer, 3rd from bottom	2	Model 6
System drawer, 4th from bottom	3	Model 8
PCI drawer, 5th from bottom	4	--
PCI drawer, 6th from bottom	5	--
PCI drawer, 7th from bottom	6	--
PCI drawer, 8th from bottom	7	--

Figure 2–12 ID Numbers



2.10 Restore Power

Close all doors. Plug the system into the outlet. Turn on each drawer in succession, starting with drawer ID#0 and working up the cabinet.

Figure 2–13 Restore Power

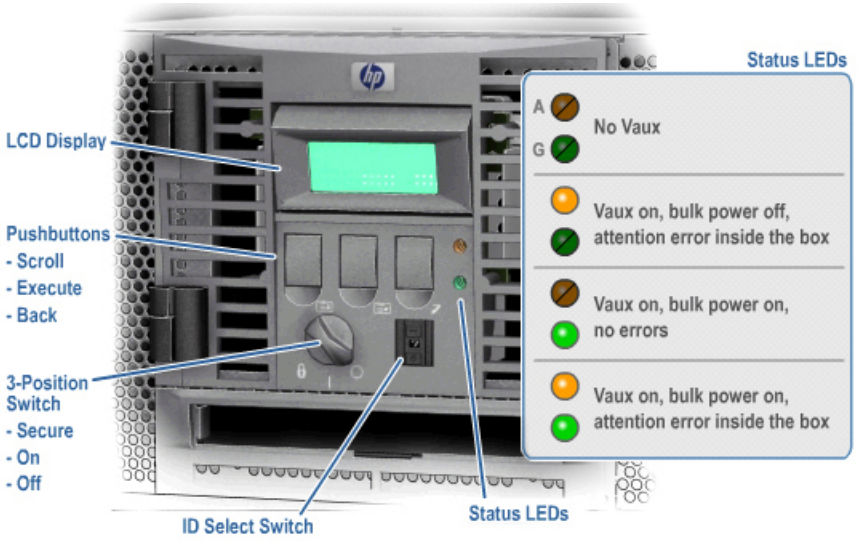


Table 2–3 OCP LED Table

Amber LED•	Green LED•	Indication
Off	Off	No Vaux
On	Off	Vaux on, bulk power off, attention error inside the box
Off	On	Vaux on, bulk power on, no errors
On	On	Vaux on, bulk power on, attention error inside the box

• The top LED is amber and the bottom LED is green.

Chapter 3
Configure and Troubleshoot

This chapter covers power-up following the hardware upgrade, and configuration of the newly installed elements into the system using the firmware. Some troubleshooting is also included.

Examples show sample console displays for a 4P system. Changes for the 6P and 8P systems are noted in the explanations. Two conventions are used:

1. Sections of console output that are not relevant to verifying this upgrade have been deleted. They are represented in the example text as:

   << ------------ lines deleted ------------- >>
   Relevant sections are highlighted. Your User Information CD has complete power-up information.

2. Commands that you input are shown in boldface type, and underlined. For example:
   show cable

Sections include:

- Notify server management of new member(s)
- Set membership takes effect
- Reset micros
- Run show cable
- Connect to partition
- Troubleshooting during console power-up
- Troubleshooting power during power-up

3.1 Notify Server Management of New Members

Restore power to the system. Server Management will find the new hardware, but you need to specify their inclusion into the system.

Example 3–1 Power-Up Display

```
MBM> 00 01 02 03 04 05 06 07 08 09 Attaching interface lo0...done
            << ------------ lines deleted ------------- >>
ES80 Server Management Failsafe Loader V2.0-2 Starting up
            << ------------ lines deleted ------------- >>
ES80 Server Management  V2.0-16 Starting up
            << ------------ lines deleted ------------- >>
.~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list. ❶
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM ❷

interrupt: GROUP IS FORMING     ❸
...~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list.
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM

..~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list.
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM

interrupt: GROUP IS STABLE      ❹
            << ------------ lines deleted ------------- >>
Configuring for 2 CPUs    ❺
            << ------------ lines deleted ------------- >>
Running test 43, Software Alerts ... on 1 EV7s
Running test 46, Other Local Interrupt Bits ... on 2 EV7s
            << ------------ lines deleted ------------- >>
MBM Init finished at: WED APR 16 09:41:27 2003
            << ------------ lines deleted ------------- >>
MBM> ~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list.
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM  ❻

~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list.
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM  ❻

~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list.
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM  ❻

~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1 is not in the member list.
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM  ❻


MBM> Set Membership -add -ca 0 -dr 1 MBM      ❼
```

Restore power to the system. You will receive a series of error messages. This is to be expected, since the console is identifying components not yet configured into the system network.

1. After you return power, the system will begin its software power-up. The Server Management will discover any newly added drawers and report them to you. ❶

2. Server management tells you what command to run to include this newly discovered drawer. ❷

3. The system will continue to power up. All during its power-up sequence it will continue to broadcast the information shown at ❶ and ❷ until you provide manual intervention to include it in the group.

4. In this 4P example, server management has succeeded in forming a stable group with the included components. ❹ But you can see at ❺ that the system is only including one 2P drawer, not your second 2P drawer, ID#1.

5. At ❻, you can see that the system is still broadcasting the hardware issue and your intervention instructions.

6. Enter the command **`set membership -add -ca 0 -dr 1 MBM.`** ❼
If you have added 2 or three 2P drawers, server management will be broadcasting the commands you need to enter to include these additional drawers as well.

Table 3–1 Set Membership Commands

Upgrading to	Dwr ID	Command
4P	1	`set membership -add -ca 0 -dr 1`
6P	2	`set membership -add -ca 0 -dr 2`
8P	3	`set membership -add -ca 0 -dr 3`

3.2 Set Membership Takes Effect

After you issue the `set membership` command, server management console will process your request.

Example 3–2 Run Set Membership

```
MBM> Set Membership -add -ca 0 -dr 1 MBM

~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:1. ❶
~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 1 MBM  ❷

MBM> The Create task has been posted      ❸

After semTake
        SendNewGroup - newid GROUPID: origadr:100000a incarnation:2 ❹
m->cnt = 2
[100000a]SendNewGroup - to node:ffffff0a creatorid:100000a
grp_Monitor_task - Message Received 101
[0100000a] NEWGROUP - from 100010a
        newid GROUPID: origadr:100010a incarnation:2
        NewP SETOFMICROS: cnt:2 {100000a 100010a }
[0100000a] SendAccept - to 0100010a
        SendAccept newid GROUPID: origadr:100010a incarnation:2  ❺
        SendAccept prevGID GROUPID: origadr:100000a incarnation:1
        SendAccept - newid GROUPID: origadr:100010a incarnation:2
        SendAccept - MicroSet SETOFMICROS: cnt:2 {100000a 100010a }
m->cnt = 2
grp_Monitor_task - Message Received 101
[0100000a] NEWGROUP - from 100010a
        newid GROUPID: origadr:100010a incarnation:2
        NewP SETOFMICROS: cnt:2 {100000a 100010a }
grp_Monitor_task - Message Received 104
[0100000a] JOIN - from 100010a
        newid GROUPID: origadr:100010a incarnation:2
        Predecessor GROUPID: origadr:[100000a2003/04/16 incarnation:
09:42:158
]       memb
 SETOFMIC~REC-W-(trecTask) SeROS: cnt:rver manage2ment group is trans
{itioninga
 100010a }
m->cnt = 2
Join - Micro:0100000a
g GROUPID: origadr:100010a incarnation:2
m SETOFMICROS: cnt:2 {100000a 100010a }
Predecessor GROUPID: origadr:100000a incarnation:1
interrupt: GROUP IS FORMING                                    ❻

grp_Create_task - Message Received 1f5
Missing Accept timer expired
```

```
Waiting for newGroupCreation to be posted
interrupt: GROUP IS STABLE     ❼
[2003/04/16 09:43:13]
~REC-W-(trecTask) Server management group is stable. ❽
```

---

1. Server management's group probe is finding drawer 1 ❶.
2. Since creation of the new membership incarnation is in process but not yet complete, until the new group ID is formed, you may receive part of the broadcast message. You do not need to re-issue the command. ❷
3. When the create task has been posted, the broadcast messages cease. ❸
4. Here the system is showing you it is creating a second incarnation of the group ID. ❹
5. And the system goes through its protocol of accepting this new information ❺.
6. The group is being formed ❻.
7. The group becomes stable ❼ and finally is declared stable ❽.

3.3 Reset Micros

Next you need to reset the Server Management micros.

Example 3–3 Run Reset Micros

```
MBM> reset -m(icros) -a(ll)                                    ❶
Resetting all micros....
MBM> 06 07 08 09 Attaching interface lo0...done
            << ------------ lines deleted ------------- >>
ES80 Server Management  V2.0-16 Starting up
            << ------------ lines deleted ------------- >>
Running POST ...
            << ------------ lines deleted ------------- >>
Join - Micro:0100000a
g GROUPID: origadr:100000a incarnation:1 ❷
m SETOFMICROS: cnt:1 {100000a }
Predecessor GROUPID: origadr:0 incarnation:0 ❸
Waiting for newGroupCreation to be posted  ❹
Forming groupppp0: ppp 2.1.2 started by 10.0.0.1
            << ------------ lines deleted ------------- >>
[0100000a] NEWGROUP - from 100010a
        newid GROUPID: origadr:100010a incarnation:2
        NewP SETOFMICROS: cnt:2 {100000a 100010a } ❺
[0100000a] SendAccept - to 0100010a
        SendAccept newid GROUPID: origadr:100010a incarnation:2 ❻
        SendAccept prevGID GROUPID: origadr:100000a incarnation:1
        SendAccept - newid GROUPID: origadr:100010a incarnation:2
        SendAccept - MicroSet SETOFMICROS: cnt:2 {100000a 100010a }
m->cnt = 2
grp_Monitor_task - Message Received 104
[0100000a] JOIN - from 100010a
        newid GROUPID: origadr:100010a incarnation:2
        Predecessor GROUPID: origadr:0 incarnation:0
        memb SETOFMICROS: cnt:2 {100000a 100010a }
m->cnt = 2
Join - Micro:0100000a
g GROUPID: origadr:100010a incarnation:2
m SETOFMICROS: cnt:2 {100000a 100010a }
Predecessor GROUPID: origadr:0 incarnation:0
...interrupt: GROUP IS FORMING  ❼
.....interrupt: GROUP IS STABLE ❽
```

1. At the MBM prompt, enter **reset -m -a** or **reset -micros -all** ❶
2. The system posts its current version of the Group ID❷ and compares its previous Group ID ❸, and waits to accept the new information. ❹
3. New group information is found and incorporated. ❺
4. System goes through its protocol to confirm the new group incarnation. ❻
5. Group is forming ❼ and becomes stable. ❽

3.4 Run Show Cable

To check your IP cable connection, run `show cable`.

Example 3–4 Run Show Cable

```
MBM> show cable ❶
IP Cabling: Each System Building Block is represented by SBB(Cabinet,
Drawer)
Each pair of matching symbols indicates wrap-around
('X' - wrong connection, 'x' - missing connection, '?' - unknown
connection)

      A0     ❷
       |  x
  -x-SBB(0,0)-x-    ❸
       |  x
       |
       |
       |
       |  x
  -x-SBB(0,1)-x-    ❹
       |  x
      A0     ❷


IO cabling between IORs of the PCI drawer and CPU IOPs

  PCI drawer                  SBB
Cab  Drw  IOR           Cab  Drw  IOP
 0    0    0   -------   0    0    0
 0    1❺   0   -------   0    1❺   0

MBM> p on   ❻
FPGA version: V3.0-0402
Read 130012 bytes
Selecting FPGA 0

Configuring for 4 CPUs ❻

       0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F

      .w.....
  ❻0  .P........
      .|.......
      .|.........
  ❻1 .P.........
```

```
      .|........
      .|........
  ❻2 .P........
      .|........
      .|........
  ❻3 .P........
      .w........
           << ------------ lines deleted ------------- >>
Running test 10, Initialize RAMBUS ... on 4 EV7s
Running test 11, Initialize Memory ... on 4 EV7s
           << ------------ lines deleted ------------- >>
Running test 43, Software Alerts ... on 1 EV7s
Running test 46, Other Local Interrupt Bits ... on 4 EV7s
           << ------------ lines deleted ------------- >>

MBM>
```

To check your cable connection:

1. Enter the command **show cable** ❶
2. The system prints out a cabling diagram. ❷ indicates where your south port from drawer ID0 connects to your north port of the top drawer, in this case, drawer ID1. Detailed diagram of the cables shown in Figure 3-4.
3. Drawer ID0 in cabinet 0 (0,0) ❸ is cabled to drawer ID1 in cabinet 0 (0,1) ❹.
4. The table at ❺ shows how the PCI I/O is connected to the CPUs:
   The first line reports that the IO port of CPU0 in drawer 0 is connected to the IO7 chip in drawer 0. The second line reports that the IO port of CPU0 in drawer 1 is connected to the IO7 chip in drawer 1.
5. Enter the command **p on** ❻ to power on.
6. Confirm that all of your CPUs are configured—in this example, 4. ❻ Each CPU is checked and reported.

3.5 Connect to Partition

Next, connect all components to your partition(s).

Example 3–5 Run Connect

```
MBM>
MBM> conn(ect)        ❶

Connecting to partition. Use the sequence ^[^[MBM to return.
starting console on CPU 0   ❷
            << ------------ lines deleted ------------- >>
Get Partition DB
hpcount = 1, spcount = 2, ev7_count = 4,  ❸  io7_count = 2
hard_partition = 0
            << ------------ lines deleted ------------- >>
probe I/O subsystem
             < ------------ lines deleted ------------- >>
starting drivers
initializing keyboard
Starting secondary CPU 1 at address 400030000  ❹
Starting secondary CPU 2 at address 800030000
Starting secondary CPU 3 at address c00030000
initializing GCT/FRU..... at 54c000
Initializing dqa dqb pka pkb pkc pkd pke pkf ega egb egc
AlphaServer Console V6.4-12, built on Mar  6 2003 at 14:32:06
P00>>>   ❺
```

1. Enter the command **conn** or **connect** ❶
2. Connects to partition using your primary CPU. ❷
3. Check your CPU count here. ❸
4. Secondary CPUs are started up. Check that all report in. ❹
5. Prompt appears. Connection complete. ❺

3.6 Troubleshooting During Console Power-up

If your server management keeps looping on trying to form the group, then you need to check your NAT box carrier lights for port connections. Next check all drawers within the cabinet (I/O and 2P drawers) to be certain they have unique identifiers.

Issuing the Set Membership command should stop the broadcast message and enable server management to create a new group ID. If your system keeps looping, your drawers may have faulty connections to the system NAT box. Each Ethernet connection should show two active LEDs.

If looping persists, check the ID numbers on the OCP of each drawer. Every drawer within any cabinet must have a unique ID. Your 2P drawers should have Ids 0, 1, 2, and 3, respectively, working from bottom to top.

3.7 Troubleshooting Power during Power-up

If you are having difficulty with power-up, check your Vaux, internal LAN and OCP, and check for 48V issues. The system needs certain minimal power and system management capabilities to power-up.

Table 3–2 Troubleshoot Vaux

Symptom	Possible Cause	Indicators
System does not power up, and/or the fans are off, and/or there is nothing on the console.	AC input box not plugged in/power cord faulty (AC input box LEDs not lit)	AC LEDs off
	AC input box circuit breakers tripped	AC LEDs off
	AC input box broken	AC LEDs off
	Power cords from AC input box to power supplies not plugged in or faulty	Power supply LEDs off
	Power supplies broken (Vaux LEDs off)	Power supply LEDs off

Table 3–3 Troubleshoot Internal LAN

Symptom	Possible Cause	Indicators
System does not power up.	Poor connections along the path from the console, wherever it is, to the internal LAN.	No messages on the console
	Router broken	No messages on the console
	Vaux problem	See Vaux problems

Table 3–4 Troubleshoot with the OCP

Symptom	Possible Cause	Indicators
System does not power up.	2P drawer OCP	
	48V problem	OCP LEDs off

Table 3–5 Troubleshoot 48V Issues

Symptom	Possible Cause	Indicators
System or part of the system does not power up and/or the fans are off	Any Vaux problem will cause 48V problems	See the Vaux, LAN and OCP sections of your Service CD
	Any LAN problem	
	Any OCP problem	
	Signal from the MBM to the power distribution panel on the subrack not good (cables or cable connections)	Power supply LEDs off
	MBM failure	Power supply LEDs off
	More than one power supply broken	Power supply LEDs off

Chapter 4
Verifying with Q-Vet

Use Q-Vet to verify your newly traded-up system.

The following topics are covered here:

- Q-Vet Considerations
- Run Q-Vet
- Installing Q-Vet
- Running Q-Vet
- Reviewing Q-Vet Results
- De-Installing Q-Vet

4.1 Q-Vet Considerations

Select the script to run:
the short IVP to verify device setup, or the long IVP for a cycle of testing.

A short IVP script is provided for a simple verification of device setup. To run the short script, select the appropriate file,

`.Ivp_short.scp` or **`ivp_short.vms`**

from the GUI IVP menu. This script will run for 15 minutes and then terminate with a summary log. The short script may be run as a preliminary to but not in place of the long IVP script, which is the full IVP test.

The long IVP will run a "cycle of testing", i.e. until the slowest device has completed one pass of all tests (typically 4 or 5 hours).

Optionally, you can increase the IVP long run time by increasing the **cyclecount** (3 passes are recommended). Two of the ways to do this are described. If you wish to know more about Q-Vet features like this, see the training course at http://learning1.americas.cpqcorp.net/wbt/cs127a-ewb/welcome.htm.

- After executing (loading) the IVP long script, issue the Q-Vet command **`set cyclecount x`**, where **`x`** is the number of cycles desired.

- If you have the GUI, simply go to the menu item Options >Cyclecount and change the setting.

4.2 Run Q-Vet

CAUTION: Misuse of Q-Vet may result in loss of customer data. Customers are not authorized to access, download, or use Q-Vet. Compaq engineers use Q-Vet during system development; they designed Q-Vet to verify system installation during development.

Q-Vet is a Qualification Verifier Exerciser Tool used to exercise systems under development. Run the latest released version of Q-Vet to verify that hardware is installed correctly and is operational. Q-Vet does not verify operating system or layered product configurations.

The latest Q-Vet release, information, Release Notes, and documentation are located at http://cisweb.mro.cpqcorp.net/projects/qvet/ or from the quarterly AlphaServer firmware CD-ROM. If the system is partitioned, Q-Vet must be installed and run separately on each partition. Since Compaq Analyze is used to view Q-Vet errors, it is useful to install it prior to running Q-Vet.

CAUTION: Do not install the Digital System Verification Software (DECVET) on the system; use Q-Vet instead.

Run only IVP scripts on systems that contain customer data or any other devices that must not be overwritten. See the Q-Vet Disk Testing Policy Notice on the Q-Vet Web site for details. All Q-Vet IVP scripts use Read Only and/or File I/O to test hard drives. Floppy and tape drives are always write-tested and should have scratch media installed.

Non-IVP Q-Vet scripts verify disk operation for some drives with write-enabled techniques. These are intended for engineering and manufacturing test only. Q-Vet must be de-installed upon completion of system verification.

4.2.1 Swap or Pagefile Space

The system must have adequate swap space (on *Tru64 UNIX*) or pagefile space (on *OpenVMS*) for proper Q-Vet operation. You can set this up either before or after Q-Vet installation.
If during initialization Q-Vet determines that the system does not have enough swap/pagefile space, it will display a message indicating the minimum amount needed. If you wish to address the swap/pagefile size before running Q-Vet, see the swap/pagefile estimates on the Q-Vet web site.

4.3 Installing Q-Vet

Install and run Q-Vet from the SYSTEM account on VMS or the root account on UNIX. Remember to install Q-Vet in each partition.

4.3.1 Tru64 UNIX

1. Make sure that there are no old Q-Vet or DECVET kits on the system by using the following command:
   `setld -i | grep VET`
   Note the names of any listed kits, such as OTKBASExxx etc., and remove the kits using **qvet_uninstall** if possible. Otherwise use the command
   `setld -d kit1_name kit2_name kit3_name`

2. Copy the kit tar file (*QVET_Vxxx.tar*) to your system.
3. Be sure that there is no directory named output. If there is, move to another directory or remove the output directory.
   `rm -r output`
4. Untar the kit with the command
   `tar xvf QVET_Vxxx.tar`
   Note: The case of the file name may be different depending upon how it was stored on the system. Also, you may need to enclose the file name in quotation marks if a semi-colon is used.
5. Install the kit with the command
   `setld -l output`
6. During the install, if you intend to use the GUI you must select the optional GUI subset (QVETXOSFxxx).
7. The Q-Vet installation will size your system for devices and memory. It also runs **qvet_tune**. You should answer '**y**' to the questions that are asked about setting parameters. If you do not, Q-Vet will not install and the Q-Vet kit will be deleted.
8. After the installation completes, you should delete the output directory with **`rm -r output.`** You can also delete the kit tar file, **QVET_Vxxx.tar**.
9. You *must* reboot the system before starting Q-Vet.
10. On reboot you can start Q-Vet GUI via **`vet&`** or you can run non GUI (command line) via **`vet -nw.`**

4.3.2 OpenVMS

1. Delete any *QVETAXPxxx.A* or *QVETAXPxxx.EXE* file from the current directory.
2. Copy the self-extracting kit image file (*QVETAXPxxx.EXE*) to the current directory.
3. We recommend but do not required, that you purge the system disk before installing Q-Vet. This will free up space that may be needed for pagefile expansion during the AUTOGEN phase.
   $purge sys$sysdevice:[*…]*.*
4. E**xtract the kit saveset with the command: `$run` QVETAXPxxx`.EXE`** and verify that the kit saveset was extracted by checking for the "Successful decompression" message.
5. Use **`@sys$update:vmsinstal`** for the Q-Vet installation. The installation will size the system for CPUs, I/O devices and memory. **If you** *do not* **intend to use the GUI, you can answer `no`** to the question "Do you want to install Q-Vet with the DECwindows Motif interface?" Otherwise choose all the default answers during the Q-Vet installation. Q-Vet installation **will verify**, tune the system, and reboot.
6. After the installation completes you should delete the *QVETAXP0xx.A* file and the *QVETAXPxxx.EXE* file.
7. On reboot you can start Q-Vet GUI via **$**vet **or the command interface via $vet/int=char**.

4.4 Running Q-Vet

Run Q-Vet on each partition in the system.

Review the Special Notices and the Testing Notes section of the Release Notes located at http://chump2.mro.cpqcorp.net/qvet/ before running Q-Vet. Follow the instructions listed for your operating system to run Q-Vet in each partition.

4.4.1 Tru64 UNIX

Graphical Interface

From the Main Menu, select **IVP**, **Load Script** and select **Long IVP** (the IVP tests will then load into the Q-Vet process window).

Click the **Start All** button to begin IVP testing.

Command-Line Interface

```
> vet -nw
 Q-Vet_setup> execute .Ivp.scp
 Q-Vet_setup> start
```

Note that there is a "**.**" in front of the script name, and that commands are case sensitive.

4.4.2 OpenVMS

Graphical Interface

1. From the Main Menu, select **IVP**, **Load Script** and select **Long IVP** (the IVP tests will then load into the Q-Vet process window).

Click the **Start All** button to begin IVP testing.

Command-Line Interface

```
$ vet /int=char
 Q-Vet_setup> execute ivp.vms
 Q-Vet_setup> start
```

Note that commands are case sensitive.

4.5 Reviewing Q-Vet Results

After running Q-Vet, check the results by reviewing the summary log.

Q-Vet will run all exercisers until the slowest device has completed one full pass. Depending on the size of the system, this will typically take 2 to 12 hours. Q-Vet will then terminate testing and produce a summary log. The termination message will tell you the name and location of this file.

All exerciser processes can also be manually terminated with the Suspend and Terminate buttons (**stop** and **terminate** commands).

After all exercisers report "Idle," the summary log is produced containing Q-Vet specific results and statuses.

A. If there are no Q-Vet errors, no system error events, and testing ran to specified completion, the following message will be displayed:

```
Q-Vet Tests Complete: Passed
```

B. Otherwise, a message will indicate:

```
Q-Vet Tests Complete: Fail
```

Run Compaq Analyze to review test results. The IVP scripts do not translate events unless they are Q-Vet detected errors. The testing times (for use with Compaq Analyze) are printed to the Q-Vet run window and are available in the summary log.

4.6 De-Installing Q-Vet

De-installation of Q-Vet differs between operating systems. You must de-install Q-Vet from each partition in the system. Failure to do so may result in the loss of customer data at a later date if Q-Vet is misused.

Follow the instructions listed under your operating system to de-install Q-Vet from a partition. The **qvet_uninstall** programs will remove the Q-Vet supplied tools and restore the original system tuning/configuration settings.

4.6.1 Tru64 UNIX

1. Command Q-Vet to **Stop, Terminate, and Exit.**
2. Execute the command **`qvet_uninstall`**, which will remove Q-Vet and restore the system configuration/tuning file **`sysconfigtab`**.
3. Note: log files are retained in **`/usr/field/tool_logs`**
4. Reboot the system. (You must reboot, even if you decide to reinstall Q-Vet. If you do not reboot tuning configurations may not be set properly.)

4.6.2 OpenVMS

1. Command Q-Vet to **Stop, Terminate, and Exit.**
2. Execute the command **@sys$manager:qvet_uninstall.** This will remove Q-Vet and restore system tuning (**modparams.dat**) and the original **UAF** settings.
3. Note: log files are retained in **sys$specific:[sysmgr.tool_logs]**
4. Reboot the system. (You must reboot even if you decide to reinstall Q-Vet. If you do not reboot tuning configurations may not be set properly.)

4.6.3 Q-Vet Resources

- Release notes and kits are available from the Q-Vet web page:
  http://chump2.mro.cpqcorp.net/qvet/
- Training may be found at:
  http://learning1.americas.cpqcorp.net/wbt/cs127a-ewb/welcome.htm
- A description of the IVP may be found at:
  http://chump2.mro.cpqcorp.net/qvet/IVP_description.html