

hp AlphaServer GS1280 Upgrades

Order Number: EK-GS128-UP. D01

This manual is for field service engineers and self-maintenance customers making model upgrades to *hp AlphaServer* GS1280 systems.

Hewlett-Packard Company

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

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Preface

Intended Audience

This manual is for service providers who are upgrading an hp AlphaServer GS1280 Model 8 system to a Model 16, a Model 16 system to a Model 32, or a Model 32 system to a Model 64.

Document Structure

This manual is organized as follows:

Chapter 1 provides information about hardware installation.

Chapter 2 describes the procedure for installing a second 8P drawer in a GS1280 cabinet.

Chapter 3 describes the procedure for upgrading from GS1280 Model 16 systems to a GS1280 Model 32 system.

Chapter 4 describes procedures for upgrading from GS1280 Model 32 systems to a GS1280 Model 64 system.

Chapter 5 describes the procedures for installing, running, and removing Q-Vet to verify the system upgrade.

Appendix A provides information for installing a dual-processor CPU module in an AlphaServer GS1280 system.

Appendix B explains the procedure to move an I/O drawer and its cabinet mounting hardware from one location in a cabinet to another location in the same or different cabinet.

Appendix C describes the steps for removing and replacing storage shelves.

Information on the Internet

Visit the *AlphaServer* Web site from the internal HP page for PDF and HTML versions of AlphaServer documentation. This site is updated as new revisions and manuals are produced. Table 1-1 lists some of the available documentation.

Firmware downloads are available at ftp://ftp.digital.com/pub/Digital/Alpha/firmware/index.html.

You can reach this from the external HP homepage.

Title	Pages	Size (MB)	PDF	HTML
hp AlphaServer ES47/ES80/GS1280				
Site Preparation	48	1.02	Y	Y
Installation Information	101	6.76	Y	Y
User Information	105	3.40	Y	Y
Server Management Tutorial	_	_	Ν	Y
Service Manual	525	6.9	Y	Y
AlphaServer Management Station Software Installation and User's Guide	97	2.51	Y	Y
CLI Reference	117	0.30	Y	Y
SRM Console Reference	71	0.25	Y	Y
Technical Summary	26	0.82	Y	Y

Table 1-1 hp AlphaServer GS1280 Documentation

Chapter 1 Before You Begin

This chapter contains important information that you need before you begin the upgrade procedure. Please read it before proceeding.

Sections in this chapter are:

- Torque Requirements
- Ground Rail Location
- Rail Hole Numbering
- Cage Nuts

1.1 Torque Requirements

Torque all fasteners as specified in Table 1-1.

			Toro	lue	
Fastener	Phillips Head Screw	Hex Bolt	IN-LBS	N-M	- Tolerance
M8	#3	13 mm	147	16.7	+/- 10%
M6	#3	10 mm	60	6.9	+/- 10%
M5	#2	_	37.5	4.0	+/- 10%
M4	#2	_	17.5	2.0	+/- 20%
M3.5	#1	-	11.9	1.4	+/- 20%

Table 1-1 Torque Requirements

1.2 Ground Rail Location

Reference is made throughout this manual to the ground rail. It is the right rear rail, as shown in Figure 1-1.

Figure 1-1 Ground Rail Location



Front

1.3 Rail Hole Numbering

Procedures throughout this manual refer to rail holes. Hole numbers are labeled on the rails and are counted from the base of the cabinet.

Figure 1–2 Rail Hole Numbering



1.4 Cage Nuts

Cage nuts are installed in rail holes and on brackets as shown in Figure 1–3. They can be oriented in either direction.

Figure 1-3 Cage Nut Installation



Chapter 2 In-Cabinet Model 8 to Model 16 Upgrade

NOTE: This procedure requires two people and takes approximately eight hours.

This chapter contains the procedure for installing a second 8P drawer and other necessary hardware in a GS1280 cabinet. Sections in this chapter are:

- Check the Upgrade Kit
- Power Down the System
- Remove Devices Above the 8P Drawer
- Install the Second Power Distribution Unit
- Install the Power Subrack
- Install the 8P Drawer
- Connect Cables
- Set the ID Switches
- Check Firmware Revisions
- Verify the System

For information about upgrading CPU modules, see *ES47/ES80/GS1280 CPU Upgrade* (EK–EGCPU–UP).

For information about upgrading memory modules, see *ES47/ES80/GS1280 Memory Upgrade* (EK–EGMEM–UP).

If the system uses the dual AC option, see *GS1280 Dual Power Option Upgrade* (EK–128DP–UP).

2.1 Check the Upgrade Kit

The part number for the in-cabinet Model 8 to Model 16 upgrade kit is 3X–BA65B–AA. Its contents are listed in Table 2-1.

NOTE: In addition to the upgrade kit, a second power distribution unit is required. This item is ordered separately. An additional AC junction box is also required. This item is supplied by the customer.

CPU and memory modules are ordered separately.

An additional cabinet may be required to hold devices that are removed from the system cabinet in this upgrade.

Quantity	Part Number	Description
1	3X-BA65A-AA	8P drawer with 4 filler modules (54–30256–01) installed
1	3X-H7513-BA	Power subrack
3	30-56638-01	Power supply
4	17-05019-01	Interprocessor cable
1	CK-BA65A-DA	Mounting kit
Mounting I	kit consists of:	
2	12-10038-01	Slide
1	128557-001	Screw, 5.5mm x 12mm, self-tapping
1	70–40876–01	Frame assembly
1	70-41053-01	Cable support assembly, rear
1	70–41159–01	Pivot arm weldment
1	70-41161-01	Bracket, shipping, cable
1	70–41163–01	Retractor assembly

Table 2-1 Model 8 to Model 16 Upgrade Kit

Quantity	Part Number	Description
1	74–60656–01	Bracket, cable deflector (skid plate)
1	74–61927–01	Bracket- mounting right-side
1	74–61929–01	Front support bracket
1	74–61934–01	Bracket, mounting
1	74–61935–01	Front left slide bracket
1	74–61936–01	Rear left slide bracket
1	74–61937–01	Front right slide bracket
1	74–61938–01	Rear right slide bracket
1	74–61940–01	Support, bar slide
1	74–61942–01	Rear support bracket
1	74–61943–01	Bracket, vertical support
1	74–61944–01	Bracket, tie
2	74–61945–01	Bracket, mounting
1	74–61982–01	Plate, front no-lock
1	74–62074–01	Bracket, left-side
1	74–62075–01	Bracket, angle left support
1	74–62333–01	Bracket, pivot support
2	74–62408–01	Bracket, angle diecast
2	74–62409–01	Bracket, support extrusion
4	90-00063-39	Screw, 10-32 x .5
2	90–09984–18	Screw, sems M5 x 0.8 x 12mm
4	90-09984-23	Screw, sems M5 pan 8mm
9	90–10754–04	Nut, hex M8
35	90-11476-01	Cage nut

Table 2-1 Model 8 to Model 16 Upgrade Kit (Continued)

Quantity	Part Number	Description
2	90-11592-02	Roll pin, 5/16 dia x 1.00 long
50	90-40219-02	Screw, M6, 16mm
8	90-40219-03	Screw, M6, 10mm
12	90-40219-04	Screw, M6, 20mm
4	90-40346-01	Nut, hex, metric, M4,
47	90-40389-01	Washer, flat, plain, 8.4mm
47	90-40390-01	Washer, lock, external tooth
3	90-40391-01	Screw, M8, hex, 12mm
19	90-40391-02	Screw, M8, hex, 25mm
6	90-40391-03	Screw, M8, hex, 35mm
2	90-40391-04	Screw, M8, hex, 50mm
15	90-40391-06	Screw, M8, hex, 15mm

Table 2-1 Model 8 to Model 16 Upgrade Kit (Continued)

2.2 Power Down the System

Shut down the operating system.

Issue the power off command from the MBM prompt:

MBM> power off

If the system is partitioned, issue the command:

MBM> power off -all

Shut off the main circuit breaker on the front of the power distribution unit (Figure 2–1).

Disconnect the main power cord from the power source.

Figure 2–1 Main Circuit Breaker



2.3 Remove Devices Above the 8P Drawer

The area from U23 to U32 in the cabinet must be clear before you can begin this upgrade. If this area is clear go to Section 2.4.

Remove any I/O drawers or storage shelves in this part of the cabinet to make room for the second 8P drawer. (See Appendix B for instructions on removing and replacing I/O drawers and Appendix C for instructions on removing and replacing storage shelves.)

Figure 2-2 shows the cabinet before the upgrade (with an I/O drawer in the area that must be cleared) and after the upgrade.



Figure 2-2 Model 8 and Model 16 Cabinets

2.4 Install the Second Power Distribution Unit

See the installation instructions included with the power distribution unit (PDU). The second PDU is installed in the position shown in Figure 2–3.

Figure 2–3 Location of Power Distribution Unit

2.5 Install the Power Subrack

2.5.1 Install the Subrack

Parts used in this step:

Quantity	Description	Part Number
12	M6 cage nuts	90–11476–01
6	M5 Phillips head screws	90-09984-18
2	M6 kepnuts	90-40148-01
4	M6 Phillips head screws	90-09984-41

1. Install cage nuts in the rails as shown in Figure 2–4. The illustration shows the section of the rail and the holes in which to install the cage nuts.



Figure 2-4 Cage Nuts for Power Subrack Installation

At the front of the cabinet align the stud of each bracket with cabinet rail hole 24 as shown in Figure 2–5. Use the square half-shears as an aid in aligning the bracket. Secure each bracket to the rail with one M6 kepnut.

At the rear of the cabinet, attach the bracket to rail holes $27~{\rm and}~24$ with M6 Phillips head screws.

Slide the subrack onto the brackets and secure it at the rear with one M5 Phillips head screw on each side.

Secure the subrack to each of the front rails with M5 Phillips head screws in holes 32 and 26.



Figure 2–5 Installing the Power Subrack

2.5.2 Install the Power Supplies

Place each power supply on the subrack and secure it with the two captive screws (Figure 2-6).





2.5.3 Install the Power Interface Assembly

Parts used in this step:

Quantity	Description	Part Number
8	M6 Phillips head screws	90-09984-41

At the rear of the cabinet attach the power interface assembly (WPI) to the cabinet rails at holes 30, 29, 27, and 25. Use four M6 Phillips head screws on each side (Figure 2–7).

Figure 2-7 Installing the Power Interface Assembly



2.6 Install the 8P Drawer

2.6.1 Install the Slide Brackets

Parts used in this step:

Quantity	Description	Part Number
1	Front left slide bracket	74-61935-01
1	Rear left slide bracket	74-61936-01
1	Front right slide bracket	74-61937-01
1	Rear right slide bracket	74-61938-01
28	M6 cage nuts	90–11476–01
24	M6 hex bolts	90-40219-01

Tools required: 10mm socket.

1. Install cage nuts in the locations indicated in Figure 2–8. The illustration shows the part of the rail and the holes in which to install the cage nuts.

Figure 2-8 Cage Nuts for 8P Drawer 1 Installation



2. Install cage nuts on the brackets as shown in Figure 2–9.

One bracket is installed on each cabinet rail. These brackets have unique part numbers; Table 2-2 lists the bracket that is installed on each rail. Align the tab at the bottom of each bracket with hole 67 of the outer rail as shown in Figure 2–9.

Secure the brackets to the cabinet rails with M6 hex bolts in the holes listed in Table 2-2. For each bracket, tighten the bolts on the inner rail first, then tighten the bolts on the outer rail at the end of the bracket. (The inner part of the rail is closer to the center of the cabinet; the outer part is closer to the front or rear of the cabinet.) Tightening the bolts on the outer rails first can damage the brackets.

		Install Bolts in These Holes	
Bracket Part Number	Install on This Rail	Inner Rail Holes	Outer Rail Holes (End of Bracket)
74–61935–01	Front left	80, 79, 68	70, 69, 68
74–61936–01	Rear left	80, 79, 68	80, 79, 75, 74, 68
74–61937–01	Front right	73, 72, 68	70, 69
74–61938–01	Rear right	73, 72, 68	70, 68

Table 2-2 Brackets for 8P Drawer Slides



Figure 2-9 Installing Brackets for 8P Drawer Slides

2.6.2 Install the Slides

Parts used in this step:

Quantity	Description	Part Number
1	Frame assembly	70-40876-01
2	Angle bracket	74-62408-01
1	Front support bracket	74–61929–01
1	Rear support bracket	74–61942–01
6	M8 hex bolts 25 mm	90-40391-02
11	External tooth washers	90-40390-01
11	M8 flat washers	90-40389-01
5	M8 hex bolts 35 mm	90-40391-03
14	M6 hex screws	90-40219-04

Tools required: 10 mm and 13 mm sockets.

1. Install the right slide (Figure 2–10). Attach it to the front and rear right brackets with four M8 hex bolts 25 mm, four external tooth washers, and four M8 flat washers. Use a 13 mm socket.



Figure 2-10 Installing the 8P Drawer Slide—Right Side

Install the left slide.

- a. Attach the frame assembly (70–40876–01) to the front left bracket with two M8 hex bolts 25 mm, two external tooth washers, and two M8 flat washers. Attach it to the rear left bracket with one M8 hex bolt 35 mm, one external tooth washer, and one M8 flat washer. Use a 13 mm socket. See Figure 2–11.
- b. Attach the two angle brackets (74–62408–01) to the left rear bracket with two M6 hex screws in the top of each. Attach them to the frame assembly with one M6 hex screw in each. Use a 10 mm socket.
- c. Attach the slide to the frame assembly with four M8 hex bolts 35 mm, four external tooth washers, and four M8 flat washers. Use a 13 mm socket.



Figure 2–11 Installing the 8P Drawer Slide—Left Side

Install the support brackets (Figure 2–12).

- a. Install the front bracket (74–61929–01) with four M6 hex screws. Use a 10 mm socket.
- b. Install the rear bracket (74–61942–01). If the holes on the bracket do not line up with the holes on the ends of the slides, move the slides forward until the holes line up. Attach the bracket with four M6 hex screws. Use a 10 mm socket.



Figure 2-12 Installing the Slide Support Brackets

2.6.3 Install the Drawer

Parts used in this step:

Quantity	Description	Part Number
2	L-shape mounting bracket	74–61945–01
2	M6 hex bolts	90-40219-02
4	M8 nuts	90–10754–04
4	External tooth washers	90-40390-01
4	M8 flat washers	90-40389-01
2	M6 hex screws	90-40219-04
2	Screws	90-00063-01
4	M5 sems screws	90-09984-18
1	Self-tapping screw	128557 - 001

Tools required: 13 mm socket.

- 1. At the front of the cabinet pull the slides all the way out. Lift the drawer onto the slides.
- 2. Attach the plate.
 - a. Remove four screws from the bottom of the front panel. Position the plate on the panel and replace the four screws (Figure 2-13).
 - b. Pull the slides forward to the plate. Secure the plate to the slides with two M6 hex bolts.



Figure 2–13 Installing the 8P Drawer Plate

- 3. Install the vertical support bracket.
 - a. Insert the key and twist the lock on drawer 0 to the left. Pull the drawer out.
 - b. Attach the vertical support bracket to the two drawers with four M8 nuts, four external tooth washers, and four M8 flat washers. Use a 13 mm socket. See Figure 2–14.
- 4. Install the tie bracket (Figure 2–14), which acts as a stiffener, on the vertical support with two M6 hex screws. Secure it to drawer 0 with two screws.



Figure 2–14 Installing the Vertical Support and Tie Bracket

- 5. Push the 8P drawers into the cabinet. Install the two L-shaped mounting brackets (74–61945–01) and the ground strap on the rear of the 8P box with two M5 sems screws on each bracket. See Figure 2–15.
- 6. Attach the ground strap to the ground rail with the self-tapping screw.



Figure 2-15 Installing Rear Brackets and Ground Strap
2.6.4 Install the 48V Power Harness

2.6.4.1 Install the Cable Management Bracket

Parts used in this step:

Quantity	Description	Part Number
1	Cable management bracket	70–40954–01
2	M6 cage nuts	90–11476–01
2	M6 hex bolts	90-40219-02
2	M4 kepnuts	90-40346-01

- 1. At the rear of the cabinet install two cage nuts on the left rail as shown in Figure 2–16. The illustration shows the section of the rail and the holes in which to install the cage nuts.
- 2. Secure the cable management bracket (70–40954–01) to the rail with two M6 hex bolts and to the cabinet with two M4 kepnuts. See Figure 2–17.

Figure 2–16 Cage Nuts for 8P Power Harness Bracket







Figure 2–17 Installing the 8P Power Harness Bracket

2.6.4.2 Install the 48V Power Harness

Parts used in this step:

Quantity	Description	Part Number
1	Blower cable	17-05117-02
4	Cable clamps	90-07083-00
4	Sems screws	90-09984-19
1	Cable holder	12-56617-01

- 1. Slide the 8P drawers fully into the cabinet.
- 2. Remove the top part of the strain relief bracket on drawer 1 (Figure 2–18), install the 48V and Vaux connectors into the line filter, and reassemble the strain relief bracket.
- 3. Connect P3 of the blower cable (17–05117–02) to the connector at the back of drawer 1.
- 4. Connect the server management cable that was run along the NAT mounting bracket to the MBM.
- 5. Place the power harness on the cable management bracket. Position the tape supplied on the power harness under the top cable tie. Secure the harness loosely to the bracket.
- 6. Insert the point of the cable holder into the hole to the right of the strain relief bracket (Figure 2–19).
- 7. Pull the drawers out and connect P4 of the blower cable to the front side of the drawer. Slide three cable clamps onto the cable and attach them to the side of the drawer with sems screws as shown in Figure 2–18.
- 8. Check the length of the service loop and adjust if necessary. Secure the cables to the cable management bracket.
- 9. Push the drawers in. Insert the blower cable into the cable holder and twist the cable holder.
- 10. Connect the server management cable to the cabinet OCP.



Figure 2–18 Installing the 8P Power Harness

Figure 2–19 Cable Holder



2.6.5 Remove Two Loopback Modules from Drawer 0

Remove the loopback modules from the upper and lower North-South connectors on drawer 0.

- 1. Loosen the captive screw on the cover and remove the cover (Figure 2–20).
- 2. Pull the levers on the loopback module apart and remove the module.
- 3. Remove the loopback module housing by removing the four screws. Save the screws.

Set one loopback connector assembly aside to be used as a spare. Install the other on drawer 1 (see Section 2.6.6).



Figure 2–20 Removing Loopback Modules

2.6.6 Install a Loopback Module on Drawer 1

Figure 2–21 shows the loopback module installation.

- 1. Attach the loopback module housing over the East-West connectors with the saved screws.
- 2. Insert the loopback module in the housing. Press the levers in.
- 3. Attach the cover to the housing and tighten the captive screw.

Figure 2–21 Installing a Loopback Module



2.6.7 Install the Interprocessor Cables

- 1. Pull out the 8P drawers far enough to give you access to the interprocessor (IP) cable connectors.
- 2. Install one end of each of the four interprocessor cables (17–05019-01) in the drawer 1 connectors (Figure 2–22).



Figure 2–22 Interprocessor Cable Connectors

3. To keep the cables close to the drawers, they must be woven before they are installed in the drawer 0 connectors. Weave the cables and install them in the drawer 0 connectors in the order listed in Table 2-3. When finished, press the cables in toward the drawers. The cables should look like Figure 2–23.

From Connector (drawer 1)	Routing (all referenced connections are in drawer 1)	Install Free End in Connector (drawer 0)
North 4, 6	Over the cable connected to South 5, 7. Then under the cable connected to South 1, 3.	South 5, 7
South 5, 7	Over the cable connected to North 0, 2.	North 4, 6
North 0, 2	Over the cable connected to South 1, 3.	South 1, 3
South 1, 3	Routing completed.	North 0, 2

Table 2-3 Interprocessor Cable Weaving

Figure 2–23 Interprocessor Cables



2.6.8 Install the I/O Cables

Parts used in this step:

Quantity	Description	Part Number
2	M6 cage nuts	90–11476–01
2	M6 screws	90-09984-41
2	M4 nuts	90-40346-01

Install the skid plate (74-60656-01): loosen the hex bolt in hole 68 of the left rear rail (this rail is on the right when you are at the rear of the cabinet) and slide the plate in (Figure 2–24); tighten the bolt.

Figure 2–24 Installing the Skid Plate and I/O Cable Bracket



Install the cable management bracket.

a. Install cage nuts as shown in Figure 2–25. The illustration shows the section of the rail and the holes in which to install the cage nuts.

Figure 2-25 Cage Nuts for I/O Cable Bracket



- b. Secure the stationary section of the bracket (74–62333–01) to holes 93 and 85 with M6 screws and to the studs with two M4 nuts. See Figure 2-24.
- c. Place the bottom pin of the movable part of the bracket (70-40955-01) in the bottom hole of the stationary part. Pull down the spring-loaded pivot pin and position it in the top hole.

Install the I/O cables in the I/O connectors of the 8P drawer and loop them over the the cable management bracket as shown in Figure 2–26.





2.6.9 Install the Memory Modules

Memory modules (RIMMs) are installed in connectors on the CPU module.

Place the CPU module on an ESD mat.

Open the RIMM hold-down bracket (Figure 2–27):

- a. Loosen the two plastic cap screws that release the far end of the bracket.
- b. Swing the free end up and pull the other end off the plastic pegs.

If you are adding a RIMM to an array, check that the RIMM size matches the other RIMMs in the array.

Insert the RIMM and press it into the connector. The locking levers on the sides of the connector should close.

Replace the hold-down bracket.

Install the CPU module (see Section 2.6.10).



Figure 2–27 Installing a Memory Module

2.6.10 Install the CPU Modules

The 8P drawer is shipped with filler modules installed. Replace the filler modules as needed with CPU modules.

Table 2-4 lists the proper placement of CPU and filler modules in a Model 16 system, and Figure 2–28 shows module slot numbering. Use the instructions that follow for installing the modules.

1. Inspect the plastic connectors on the module for damage. If a connector is damaged, do not use the module.

Slide the module into place. Be sure the module is in the module guides.

CAUTION: Damage can result if the levers are closed when the module is not properly seated.

Close both levers at the same time.

Number of		8P Dra	wer 0 Slo	ts		8P Drav	ver 1 Slo	ts
Dual-CPU Modules in System	0, 1	2, 3	4, 5	6, 7	0, 1	2, 3	4, 5	6, 7
8	CPU	CPU	CPU	CPU	CPU	CPU	CPU	CPU
6	CPU	CPU	CPU	Filler	CPU	CPU	CPU	Filler
4	CPU	Filler	CPU	Filler	CPU	Filler	CPU	Filler
2	CPU	Filler	Empty	Filler	CPU	Filler	Empty	Filler
1	CPU	Filler	Empty	Filler	Empty	See note	Empty	See note

Table 2-4 CPU and Filler Module Placement

NOTE: A filler module can be placed in this slot but is not required. The slot can be left empty.

Figure 2–28 Module Slot Numbering



2.7 Connect Cables

2.7.1 OCP Cables

Plug cables into the OCP connectors listed in Table 2-5. See Figure 2–29.

Cable from	OCP Connector
Power subrack 0	J1
Power subrack 1	J2
8P drawer 0	J3
8P drawer 1	J4
I/O drawer 0	J5
I/O drawer 1	J6

Table 2-5 OCP Cables

Figure 2–29 OCP Cable Connectors



2.7.2 Wiring Diagram

Attach all cables and power cords as shown in the wiring diagram (Figure 2–30).





2.8 Set the ID Switches

Each device in the cabinet must have a unique ID. Set the two 8P drawers to 0 and 1, and set the IDs on the power subracks and I/O drawers to numbers between 2 and F (see Figure 2–31).

Figure 2–31 Device ID Switches



2.9 Check Firmware Revisions

1. Power up the system.

Issue this command from the MBM prompt:

MBM> show version

Update firmware if necessary.

2.10 Verify the System

See Chapter 5 for the verification procedure.

Chapter 3 Model 16 to Model 32 Upgrade

This chapter contains the procedures for upgrading from GS1280 Model 16 systems to a GS1280 Model 32 system. Topics include:

- Using the GS1280 Model 16 to Model 32 Upgrade
- Combining two side-by-side Model 16 systems into a GS1280 Model 32 system

3.1 Model 16 to Model 32 Upgrade

The GS1280 Model 16 to Model 32 upgrade kit (3X-BA65C-AA) consists of the two cabinets for a base GS1280 Model 32. Installation involves the transfer of CPU modules, I/O drawers, and storage from the existing GS1280 Model 16 cabinet to the new upgrade cabinet. This upgrade permits the next upgrade step, at a later date, to a GS1280 Model 64. Also, this upgrade includes a Dual AC power supply, standard.

Figure 3–1 illustrates the process for performing the upgrade.



Figure 3-1 Installing a GS1280 Model 16 to Model 32 Upgrade Kit

3.1.1 Upgrade Kit Contents

Table 3-1 lists the contents of the GS1280 Model 16 to Model 32 upgrade kit (3X-BA65C-AA):

Table 3-1 Model 16s to Model 32 Upgrade Kit

Quantity	Part Number	Description
1	70-41015-03	32-64P Kernel cabinet
1	70-41236-01	Superdome power cabinet assembly
6	30-10015-01	Power supply, 48V, 200-240VIN
4	3X-BA65A-AA	ML8/128 CPU/mem bldg blk draw
8	54-30256-01	CPU filler
1	EK-GS128-UP	This document
2	37-05183-02	Package assembly
8	17-05019-01	8P IP cbl, 0.4m, white/red

4	17-05019-02	8P IP cbl, 1m, white/blue
1	70-41234-01	Sheet metal assembly

Additional CPUs, I/O drawers, and other components ordered with the upgrade are integrated into the upgrade cabinets at the factory before shipment.

3.1.2 Power Down the GS1280 Model 16 System

- 1. Shut down the operating system.
- 2. Issue the power off command from the MBM prompt:

MBM> power off

If the system is partitioned, issue the following command:

MBM> power off -all

- 3. Shut off the main circuit breakers on the front of the power distribution unit.
- 4. Disconnect the main power cord from the power source.

3.1.3 Move CPU Modules

Move all of the duel CPU modules from the existing Model 16 system to the new Model 32 upgrade. Install the dual CPU modules according to the configuration information in Appendix A.

3.1.4 Move I/O Drawers

Remove all I/O drawers and their rack mount kits from the Model 16 system and install them in the power cabinet of the Model 32 upgrade, or an expansion cabinet. Follow the procedures described in Appendix B.

3.1.5 Move Storage Shelves

Move storage shelves, if any, from the Model 16 system and install them in the power cabinet of the Model 32 upgrade or an expansion cabinet. Follow the procedures described in Appendix C.

3.1.6 Completing the Installation

The upgrade now has all the components configured as a GS1280 Model 32 that would arrive new from the factory. To complete the installation, follow the procedures for installation of a GS1280 Model 32 in Section 2.8 of the *hp AlphaServer ES47/ES80/GS*

1280 Installation Guide. You can find the guide on the documentation CD that is included with every system, or on the *AlphaServer* pages on the Web at the following location:

http://h18002.www1.hp.com/alphaserver/

Note: Connect all of the I/O drawers from the existing GS1280 Model 16 to the same CPU I/O ports on the new GS1280 Model 32. Connect the new I/O drawers that come with the upgrade to the next sequential CPU I/O ports.

3.2 Combining Two Side-By-Side GS1280 Model 16 Systems into a GS1280 to Model 32

The following sections describe the procedure for combining two Model 16 systems into one Model 32 system. Be aware that the combining of two Model 16 systems side by side into a GS1280 Model 32 does not permit future expansion to a Model 64.

3.2.1 Conversion Kit Contents

Table 3-2 lists the contents of the side-by-side GS1280 Model 16 to Model 32 conversion kit (3X–BNPSB–03).

Quantity	Part Number	Description
4	17-05019-03	Interprocessor cables (cabinet-to-cabinet)
1	17-04991-03	Ground cable
1	17-05097-01	Ethernet cable
2	128557-001	M5 self-tapping screws
1	EK-GS128-UP	This document

Table 3-2 Side-by-Side Model 16 to Model 32 Conversion Kit

3.2.2 Join the System Cabinets

- 1. Position the cabinets. The two system cabinets must be next to each other.
- Remove the side panels where the system cabinets will be joined (Figure 3– 2).
- 3. Open the front door.
- 4. Lift the cabinet top cover and remove.
- 5. Loosen the panel securing screw at the front bottom of the cabinet for the panel being removed.
- 6. Lift the panel up approximately 2 cm until it stops. Pull the panel from the frame and remove.
- 7. Tighten the panel securing screw.
- 8. Roll the cabinets as closely together as possible.
- 9. Align the front and rear edges of the cabinets.
- 10. Align the cabinet heights by adjusting the leveling feet (Figure 3–3).
- 11. Join the cabinets with four screws as shown.
- 12. Connect the ground wire (128557–001) to both cabinets as shown in Figure 3–4, using the two M5 self-tapping screws. The ground wire should be attached to each cabinet at the right rear rail (as viewed from the front).



Figure 3-2 Removing the Cabinet Side Panels

Figure 3–3 Joining the System Cabinets



Figure 3-4 Attaching the Ground Wire



3.2.3 Remove Loopback Modules

Remove the loopback modules from the East-West connectors on all 8P drawers. Figure 3-5.

- 1. Disconnect the cables from the North (4, 6) and South (5, 7) connectors if working on the top drawer, or from the North (0, 2) and South (1, 3) connectors if working on the bottom drawer. See Figure 3–6 for connector locations.
- 2. Loosen the captive screw on the cover and remove the cover.
- 3. Pull the levers on the loopback module apart and remove the module.
- 4. Remove the loopback module housing by removing the four screws. Save the screws.



Figure 3–5 Removing Loopback Modules



Figure 3-6 Interprocessor Cable Connectors

3.2.4 Install the Interprocessor Cables

- 1. Install the four IP cables in the East-West connectors of the two 8P drawers in the cabinet on the right (cabinet 0, drawers 0 and 1). See Figure 3–7.
- 2. Slide the drawers into the cabinet, guiding the cables out the rear.
- 3. Loop each cable around the cable management bracket behind the drawer. The cables must lay in a neutral position and not be twisted on the tray. Make the loop large enough to almost reach the bottom of the drawer.
- 4. Pull the drawers out to test the size of the service loops. When they are sufficient, secure the cables to the cable management brackets with two cable ties on each.
- 5. Route the cables through the opening in the cabinet side and into the cabinet on the left.
- 6. Loop the cables around the cable management brackets.
- 7. If necessary, twist the cables to ensure a neutral loop and proper connector orientation.
- 8. Plug the cables into the connectors of the 8P drawers in cabinet 1. See Table 3-3.

Table 3-3 Interprocessor Cable Routing

From Cabinet 0 Connector	To Cabinet 1 Connector
Drawer 0 West 0, 1	Drawer 0 East 6, 7
Drawer 0 East 6, 7	Drawer 0 West 0, 1
Drawer 1 West 0, 1	Drawer 1 East 6, 7
Drawer 1 East 6, 7	Drawer 1 West 0, 1





3.2.5 Connect the NAT Boxes

The internal LAN consists, in part, of the microprocessors on the MBM and PBM modules. This is accomplished by connecting the MBM and PBM in each cabinet to the NAT box in that cabinet and then connecting the NAT boxes to each other.

- 1. Reseat both ends of all cables between the NAT box in each cabinet and any destination.
- 2. Using the 39-inch network cable (17–05097–01), make a single connection between the NAT boxes in the two system cabinets. See Figure 3–9. If either of these NAT boxes has an uplink port, make the connection from that port to a LAN port in the other NAT box. Otherwise, connect the NAT boxes from LAN port to LAN port.

Figure 3-8 Connecting the NAT Boxes



REAR

3.2.6 Set the ID Switches

Set both system cabinet ID switches to 0 (see Figure 3–9). Since the two system cabinets share an ID, each device in the two cabinets must have a unique ID. Set the four 8P drawers to 0, 1, 2, and 3, and set the IDs on the power subracks and I/O drawers to numbers between 4 and F (see Figure 3–10).

Figure 3-9 System Cabinet ID Switch



Figure 3–10 Device ID Switches



3.2.7 Check Firmware Revisions

Check the firmware revisions as follows:

- 1. Power up the system.
- 2. Issue the following command from the MBM prompt: MBM> show version
- 3. Update the firmware if necessary.

3.2.8 Reconfigure and Verify the System

At the MBM prompt enter the following command: MBM> set membership auto $% \mathcal{M}(\mathcal{M})$

See Chapter 5 for the verification procedure.

Chapter 4 Model 32 to Model 64 Upgrade

This chapter describes procedures for upgrading from GS1280 Model 32 systems to a GS1280 Model 64 system. The following methods are discussed:

- Using the GS1280 Model 32 to Model 64 Upgrade Kit
- Combining Two Side-By-Side GS1280 Model 64 systems into a GS1280 Model 64 system

4.1 Upgrade Kits

Table 4-1 lists the contents of the Model 32 to Model 64 Upgrade Kit (part number 3X-8A650-AA).

Table 4-1 Model 32 to Model 64 Upgrade Kit

Quantity	Part Number	Description
1	70-41015-03	32-64P Kernel Cabinet
1	70-41236-01	Superdome Power Cabinet Assembly
6	30-10015-01	Power Supply, 48V, 200-240VIN
4	3X-BA65A-AA	ML8/128 CPU/Mem Bldg Blk Drawer
8	54-30256-01	CPU filler
2	37-05183-02	Package Assembly
8	17-05019-01	8P IP cable, 0.4m, white/red
4	17-05019-02	8P IP cable, 1m, white/blue
1	70-41234-01	Sheet Metal Assembly
8	17-05019-03	Interprocessor cables (cabinet-to-cabinet)

1	17-04991-03	Ground cable
1	17-05097-01	Ethernet cable
2	128557-001	M5 self-tapping screws
1	EK-GS128-UP	This document

Table 4-2 lists the contents of the Side-by-Side Model 32 to Model 64 interconnect cable kit.

Quantity	Part Number	Description
8	17-05019-03	Interprocessor cables (cabinet-to-cabinet)
1	17-04991-03	Ground cable
1	17-05097-01	Ethernet cable
2	128557-001	M5 self-tapping screws
1	EK-GS128-UP	This document

Table 4-2 Side-by-Side Model 32 to Model 64 Interconnect Cable Kit

Note: The Model 32 to Model 64 Upgrade Kit combines the Conversion Kit with the base GS1280 Model 32 hardware. The installation procedure for the Upgrade Kit combined with an existing GS1280 Model 32 is therefore identical to the procedure for two in-place GS1280 Model 32 systems.

4.2 Join the System Cabinets

- 1. Position the cabinets. The two system cabinets must be next to each other.
- 2. Remove the side panels where the system cabinets will be joined (see Figure 4-1).
- 3. Open the front door.
- 4. Lift the cabinet top cover and remove.
- 5. Loosen the panel securing screw at the front bottom of the cabinet for the panel being removed.

- 6. Lift the panel up approximately 2 cm until it stops. Pull the panel from the frame and remove.
- 7. Tighten the panel securing screw.
- 8. Roll the cabinets as closely together as possible.
- 9. Align the front and rear edges of the cabinets.
- 10. Align the cabinet heights by adjusting the leveling feet (see Figure 4–2).
- 11. Join the cabinets with four screws as shown.
- 12. Connect the ground wire (128557–001) to both cabinets as shown in Figure 4–3, using the two M5 self-tapping screws. The ground wire should be attached to each cabinet at the right rear rail (as viewed from the front).

Figure 4-1 Removing the Cabinet Side Panels





Figure 4-2 Joining the System Cabinets

Figure 4–3 Attaching the Ground Wire


4.3 Install the Interprocessor Cables

Determine the location and order of installation of the eight IP cables that connect the 8P drawers in cabinet 0 to the 8P drawers in cabinet 1, as shown in Figure 4-4. Then do the following:

- 1. Remove the IP cables from the box they come in and lay them out as straight as possible on the floor.
- 2. Using Table 4-3, label each end of the cables with the location of its connection to a particular CPU IP port.
- 3. Pull out the drawers in system cabinet 0 and 1.
- 4. Beginning with cable #1, attach the end marked D3 South 1, 3 to its CPU IP port on the side of drawer 3. If there is a cable already attached to this connector, you must remove it.
- 5. Tie wrap the cable to the back of the drawer.
- 6. Put a 180 degree clockwise twist in the cable and lay it on the lower tray of the cable pivot arm. Tie wrap the cable so it keeps its twist.
- 7. Test that when you push the drawers back into the cabinet, the cable pivot arm pivots and a controlled service loop is created.
- 8. Place the cable onto the top channel of the cable management bar at the rear of the cabinet and thread it into system cabinet 1.
- 9. Connect the other end to the CPU IP port on the side of drawer 3 in cabinet 1.
- 10. Tie wrap the cable to the back of the drawer.
- 11. Repeat step 6 on this end of the cable.
- 12. Test that when you push the drawers back into the cabinet, the cable pivot arm pivots and a controlled service loop is created.
- 13. Repeat steps 4 through 12 for each cable, changing the specific connections to CPU IP ports appropriately.
- 14. Dress each cable in particular tie wrap the cables to the cable management bar in system cabinet 0.

Cable #	From Ca	abinet 0	To Cabinet 1				
	Drawer	Label	Drawer	Label			
1	3	From C0, D3 South 1, 3	2	To C1, D2 North 0, 2			
2	3	From C0, D3 South 5, 7	2	To C1, D2 North 4, 6			
3	2	From C0, D2 North 0, 2	3	To C1, D3 South 1, 3			
4	2	From C0, D2 North 4, 6	3	To C1, D3 South 5, 7			
5	1	From C0, D1 South 1, 3	0	To C1, D0 North 0, 2			
6	1	From C0, D1 South 5, 7	0	To C1, D0 North 4, 6			
7	0	From C0, D0 North 0, 2	1	To C1, D1 South 1, 3			
8	0	From C0, D0 North 4, 6	1	To C1, D1 South 5, 7			





4.4 Connect the NAT Boxes

The internal LAN consists, in part, of the microprocessors on the MBM and PBM modules. This is accomplished by connecting the MBM and PBM in each cabinet to the NAT box in that cabinet and then connecting the NAT boxes to each other.

- 1. Reseat both ends of all cables between the NAT box in each cabinet and any destination.
- 2. Using the 39-inch network cable (17–05097–01), make a single connection between the NAT boxes in the two system cabinets, as shown in Figure 4–5. If either of these NAT boxes has an uplink port, make the connection from that port to a LAN port in the other NAT box. Otherwise, connect the NAT boxes from LAN port to LAN port.



Figure 4-5 Connecting the NAT Boxes

Model 32 to Model 64 Upgrade 4-7

4.5 Set the ID Switches

Set the ID switch of cabinet 0 to 0 and the ID switch of cabinet 1 to 1 (see Figure 4–6). In each cabinet, set the four 8P drawers to 0, 1, 2, and 3 (starting at the bottom), and set the IDs on the power subracks and I/O drawers to numbers between 4 and F (see Figure 4–7).

Figure 4-6 System Cabinet ID Switch



Figure 4-7 Device ID Switches



4.6 Reconfigure CPU Modules

To reconfigure the CPU modules, place the modules for the new combined Model 64 system according to the instructions in the Model 64 chart in the *CPU Module Installation Card* (part number EK-EGCPU-UP.E01).

4.7 Check Firmware Revisions

Check the firmware revisions as follows:

- 1. Power up the system.
- 2. Issue the following command from the MBM prompt: MBM> show version

Update the firmware if necessary.

4.8 Reconfigure and Verify the System

To reconfigure and verify the system, enter the following command at the MBM prompt:

MBM> set membership auto

See Chapter 5 for the verification procedure.

Chapter 5 Verification Procedure

Q-Vet is used to verify the installation. Sections in this chapter are:

- Q-Vet Installation Verification
- Installing Q-Vet
- Running Q-Vet
- Reviewing Results of the Q-Vet Run
- Uninstalling Q-Vet

5.1 Q-Vet Installation Verification

The Qualification Verifier Exerciser Tool (Q-Vet) is used to exercise systems under development to verify that hardware is installed correctly and is operational. It does not verify operating system or layered product configurations.

CAUTION: Q-Vet is for use by authorized Hewlett-Packard service personnel and service partners only. The misuse of Q-Vet can result in the loss of data.

The Q-Vet software is included on the Alpha Systems Firmware Update CD. The readme file included with the program points to an internal web site for HP personnel, which is referenced several times in the chapter. CAUTION: Do not install the Digital System Verification Software (DECVET) software; use Q-Vet instead.

All Q-Vet IVP scripts use Read Only and File I/O to hard drives. Non-IVP scripts verify disk operations for some drives, with Write Enabled techniques and are for engineering and manufacturing test use only. Flexible diskette and tape drives are always write tested from Q-Vet scripts and should have scratch media installed.

Q-Vet must be uninstalled upon completion of system verification.

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 want to address the swap/pagefile size before running Q-Vet, see the swap/pagefile estimates on the Q-Vet web site.

5.2 Installing Q-Vet

Install and run Q-Vet from the SYSTEM account on VMS or the root account on UNIX.

If the system is partitioned, Q-Vet must be installed and run separately on each partition. Because Compaq Analyze is used to view Q-Vet errors, it is useful to install it prior to running Q-Vet.

5.2.1 Tru64 UNIX

 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 -1 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**. Answer '**y**' to the questions about setting parameters. If you do not, Q-Vet will not be installed and the Q-Vet kit will be deleted.
- 8. After the installation is completed, 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 it from the command line by specifying the command vet -nw.

5.2.2 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. HP recommends 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. The command is \$purge sys\$sysdevice:[*...]*.*
- 4. Extract 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, IO 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.
- On reboot you can start Q-Vet GUI via \$vet or the command interface via \$vet/int=char.

5.3 Running Q-Vet

Run Q-Vet on each partition in the system.

HP recommends that you review the Special Notices and the Testing Notes section of the Release Notes located on Q-Vet Web site.

Follow the instructions listed for your operating system to run Q-Vet in each partition.

5.3.1 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	<pre>> vet -nw Q-Vet_setup> execute .lvp.scp Q-Vet_setup> start</pre>				
	Note that there is a "." in front of the script name, and that commands are case sensitive.				

5.3.2 OpenVMS

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 /int=char Q-Vet_setup> execute ivp.vms Q-Vet_setup> start
	Note that commands are case sensitive

NOTE: 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," for example, until the slowest device has completed one pass of all tests (typically four or five hours).

Optionally, you can increase the IVP long run time by increasing the **cyclecount** (three 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.

- 1. After executing (loading) the IVP long script, issue the Q-Vet command **set cyclecount** x, where x is the number of cycles desired.
- 2. If you have the GUI, simply go to the menu item Options >Cyclecount and change the setting.

5.4 Reviewing Results of the Q-Vet Run

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 two 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.

• 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

• 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.

5.5 Uninstalling Q-Vet

When uninstalling Q-Vet, you must uninstall it from each partition in the system. Failing to do so may result in the loss of customer data at a later date if Q-Vet is misused.

The procedure for uninstalling of Q-Vet differs between operating systems. Follow the instructions listed under your operating system to uninstall Q-Vet from a partition. The **qvet_uninstall** programs will remove the Q-Vet supplied tools and restore the original system tuning/configuration settings.

5.5.1 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*.

NOTE: Log files are retained in /usr/field/tool_logs

3. 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.

5.5.2 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.

NOTE: Log files are retained in sys\$specific:[sysmgr.tool_logs]

3. 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.)

Appendix A CPU Placement

This appendix provides information for installing a dual-processor CPU module in an AlphaServer GS1280 system. You can find additional information in the *AlphaServer ES47/ES80/GS1280 User Information* manual. The basic steps are as follows:

- 1. Identify the cabinet, drawer, and slot for the CPU module.
- 2. Open the computer system cabinet.
- 3. Access the 8P CPU drawer.
- 4. Install the CPU module.
- 5. Verify the installation.

Be aware of the following cautions and warnings when installing a CPU module:



WARNING: To prevent injury, access is limited to persons who have appropriate technical training and experience. Such persons are expected to understand the hazards of working within this equipment and take measures to minimize danger to themselves or others.



WARNING: CPU modules and memory modules have parts that operate at high temperatures. Wait 2 minutes after power is removed before touching any module.



CAUTION: Wear an antistatic wrist strap when working on this system.



CAUTION: To reduce the risk of electrical shock or damage to the equipment: Do not disable the power cord grounding plug. The grounding plug is an important safety feature. Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

A.1 Identify the Cabinet, Drawer, and Slot for the CPU Module

Note: All slots in drawers must be filled with either a CPU or a filler module.

Each CPU module contains two EVs. Figure A-1 shows the numbering of the slots in an 8P CPU drawer.

Figure A-1 Device ID Switches



Use the following tables to determine the cabinet, drawer, and slot into which to install your CPU module.



16P System

Module Placement Drawer 1 Drawer 0 0-1 6-7 2-3 0-1 6-7 4-5 2-3 4-5 16 Х Х Х Х Х Х Х Х EVs 12 10 8 6 Х χ 0 Х Х Х Х Х Х Х Х Х χ 0 Х 0 Х Х 0 Х 0 Х 0 Х 0 Х 0 Х 0 Х 0 Х Х 0 Х Х 0 0 0 0 4 Х 0 Х 0 0 0 0 0 2 0 0 0 0 0 0 Х 0 CPU (X) & Filler (O) Slot Assignment

32P System (1 Cabinet)												
Modul Place	le ment		Dra	wer O		Drawer 1						
		2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5			
	32	Х	Х	Х	Х	Х	Х	Х	Х			
	30	Х	Х	Х	Х	Х	Х	Х	Х			
	28	Х	Х	Х	Х	Х	Х	Х	Х			
	26	Х	Х	Х	Х	Х	Х	0	Х			
	24	Х	Х	0	Х	Х	Х	0	Х			
	22	Х	Х	0	Х	Х	Х	0	Х			
	20	Х	Х	0	Х	Х	Х	0	Х			
EVe	18	Х	Х	0	Х	0	Х	0	Х			
LVO	16	0	Х	0	Х	0	Х	0	Х			
	14	0	Х	0	Х	0	Х	0	Х			
	12	0	Х	0	Х	0	Х	0	Х			
	10	0	Х	0	Х	0	Х	0	Х			
	8	0	Х	0	Х	0	Х	0	Х			
	6	0	Х	0	Х	0	Х	0	0			
	4	0	Х	0	0	0	Х	0	0			
	2	0	Х	0	0	0	0	0	0			
			Drav	ver 2		Drawer 3						
	32	Х	Х	Х	Х	Х	Х	Х	Х			
	30	Х	Х	Х	Х	Х	Х	0	Х			
	28	Х	Х	0	Х	Х	Х	0	Х			
	26	Х	Х	0	Х	Х	Х	0	Х			
	24	Х	Х	0	Х	Х	Х	0	Х			
	22	Х	Х	0	Х	0	Х	0	Х			
	20	0	Х	0	Х	0	Х	0	Х			
	18	0	Х	0	Х	0	Х	0	Х			
EVs	16	0	Х	0	Х	0	Х	0	Х			
	14	0	Х	0	Х	0	Х	0	0			
	12	0	Х	0	0	0	Х	0	0			
	10	0	Х	0	0	0	0	0	0			
	8	0	0	0	0	0	0	0	0			

0 0 0 0 0 0 0 0 CPU (X) & Filler (0) Slot Assignment

0 0

0

0

0 0

0

6

4 0 0 0 0 0 0 0 0

2

0 0

0

64P System (Cabinet 0)

Module Placement

	Drawer 0					Drawer 1			Drawer 2				Drawer 3			
EVs	2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5
64	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
60	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
56	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	0	Х	Х	Х	0	Х
52	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	0	Х	Х	Х	0	Х
48	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х
44	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х
40	Х	Х	0	Х	Х	Х	0	Х	0	Х	0	Х	0	Х	0	Х
36	Х	Х	0	Х	Х	Х	0	Х	0	Х	0	Х	0	Х	0	Х
32	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х
24	0	Х	0	Х	0	Х	0	Х	0	Х	0	0	0	Х	0	0
16	0	Х	0	Х	0	Х	0	Х	0	0	0	0	0	0	0	0
64P :	64P System (Cabinet 1)															

	Drawer 0			Drawer 1			Drawer 2				Drawer 3					
EVs	2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5	2-3	0-1	6-7	4-5
64	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
60	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	0	Х	Х	Х	0	Х
56	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	0	Х	Х	Х	0	Х
52	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х
48	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х	Х	Х	0	Х
44	Х	Х	0	Х	Х	Х	0	Х	0	Х	0	Х	0	Х	0	Х
40	Х	Х	0	Х	Х	Х	0	Х	0	Х	0	Х	0	Х	0	Х
36	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х
32	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х	0	Х
24	0	Х	0	Х	0	Х	0	Х	0	Х	0	0	0	Х	0	0
16	0	Х	0	Х	0	Х	0	Х	0	0	0	0	0	0	0	0

CPU (X) & Filler (O) Slot Assignment.

AlphaServer GS1280 Systems can use two different CPUs:

CPU Speed	Part Number
$1150 \mathrm{~MHz}$	3X-KN72C-xx
$1300 \mathrm{~MHz}$	3X-KN72D-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.

A.2 Open the Cabinet

The follow steps describe the procedure for opening the cabinet:

- 1. Back up all important data, systematically shut down your applications, and perform an orderly shut down of the operating system of each partition associated with the target 8P drawer.
- 2. Once the operating system is shut down, execute the **p off** MBM console command. For a system with partitioned CPUs, you must power down all of the CPU partitions associated with the target 8P drawer in which you are installing the CPU module by typing in the following MBM console command:

>>> p off -hp <partition_name>

- 3. Wait for the orderly shutdown to complete.
- 4. Unlock and open the front door.

A.3 Access the 8P CPU Drawer

The following steps describe the procedure for accessing the 8P CPU drawer:

1. At the rear of the cabinet, make sure that the cable supports are unlatched and free to move (Figure A-2).

Figure A-2 Cabinet Cable Supports





CAUTION: If the cabinet has more than two 8P drawers, pull out and secure the stabilizer bar.

2. Unlock the key latch holding all the drawers to the cabinet frame and pull all drawers from the cabinet (Figure A-3).



Figure A-3 Key Latch Location

3. On the right side of the drawer, use the CPU cover latches (Figure A-4) to open the door to the CPU compartment.

Figure A-4 CPU Cover Latches



- 4. Ensure that power has been turned off by checking that the CPU LEDs are flashing.
- 5. If a filler module is currently occupying the space where the CPU module is to be installed, remove the filler module by opening the locking levers and sliding the module out of the drawer

A.4 Access the 8P CPU Drawer

Note: When adding or replacing a Dual CPU Building Block module (3X-KN72x-xx) that contains a 4GB Memory Option (3X-MS7AB-DA), ensure that four RIMM VRMs are installed in the CPU being added to the configuration. In a repair situation, it will be necessary to remove a VRM from the Dual CPU being removed from the system and it will be necessary to add the VRM into the Dual CPU being added to the configuration.

The following steps describe the procedure for accessing the 8P CPU drawer:

1. Slide the new CPU module into place. Be sure the module is in the module guides (Figure A-5).

Figure A-5 Module Guides



2. Close both locking levers at the same time.



CAUTION: Damage may result if the levers are not closed simultaneously or if they are closed when the module is not properly seated.

- 3. Close the drawer door and push the drawers back into the cabinet.
- 4. If necessary, prepare the stabilizer bar for retraction and push it back into the cabinet.
- 5. Close the cabinet door.

A.5 Verify the Installation

The following steps describe how to verify the installation:

- 1. Power up the system. Server management runs its power-up self-tests and displays information indicating that the CPU module has been added. Then, the MBM management console command prompt appears.
- 2. To verify that the CPU module appears in the System Building Block Table, type in the following command:

show sys

3. If you have a system with partitioned CPUs, power up the partition associated with the CPU module you just installed by typing in the following command:

```
p on -hp <partition_name>
```

4. If you are using a serial connection to perform management, you can connect to the SRM console by typing in the following command:

```
connect -hp <partition_name>
```

At the SRM command prompt, you can type in the **show config** command and observe the resulting display to confirm that server management has properly recognized the addition of your new CPU module to the system.

Part numbers for CPU module options can be found in the appropriate Quick Specs using the following URL:

http://h18002.www1.hp.com/alphaserver/technology/index.html

Troubleshooting information can be found in the *AlphaServer ES47/ES80/GS1280 Service Information*.

Appendix B I/O Drawer Removal and Replacement

This Appendix explains the procedure to move an I/O drawer and its cabinet mounting hardware from one location in a cabinet to another location in the same or different cabinet.

B.1 Remove I/O Drawer and Mounting Hardware

This section explains the procedure to remove an I/O drawer and its mounting hardware from a cabinet in preparation for moving the I/O drawer to another location. The basic steps are as follows:

- 1. Remove the cabinet side panel.
- 2. Remove the I/O drawer.
- 3. Remove the I/O cables.
- 4. Remove the cable retainer and grommet.
- 5. Remove the outer slides.
- 6. Remove the cable guides.
- 7. Remove the cable support bracket from the rear door.

B.1.1 Remove the Cabinet Side Panel

Remove the side panel of the cabinet from which you are going to remove the I/O drawer (Figure B-1). You need access to the side rails of this cabinet in order to remove all the mounting hardware for the I/O drawer.



Figure B-1 Remove Cabinet Side Panel

- 1. Open the front door.
- 2. Pry the top panel off and lift it up. Set it aside.
- 3. For 34U and 41U cabinets, remove the screws at the bottom of the side panel (front and rear). In this illustration, it is the right side panel (as viewed from the front). If your cabinet is a 42U cabinet, use your door key to unlock the side panels and then proceed.
- 4. Starting at the bottom, pry the side panel away from the cabinet

B.1.2 Remove I/O Drawer

Remove the I/O drawer from the cabinet (Figure B-2).

Figure B-2 Removing the I/O Drawer



CAUTION: Two people are required to lift and remove the I/O drawer in the cabinet. The estimated weight of the drawer is 143 kg (65 lb).

- 1. Shutdown the operating system and power off the system.
- 2. Open the front and unplug the power supplies.
- 3. At the rear of the cabinet, remove all cables connected to devices in the I/O drawer.
- 4. Release the two latches that hold the drawer in place and pull the drawer until it locks in the out position.
- 5. Disconnect the ground cable from the right rear cabinet rail. Set aside selftapping screw for later reinstallation.
- 6. Release the mounting rail locks and pull the drawer completely out the rear of the cabinet.

B.1.3 Remove I/O Cables

If the I/O drawer will be connected to a different CPU drawer, disconnect the I/O cables from the CPU drawer and remove the cables from the cabinet (Figure B-3).



Figure B-3 I/O Cable Connections to CPU Drawer for GS1280

B.1.4 Remove Cable Retainer and Grommet

Remove the cable retainer and grommet from the front right (as viewed from the front) cabinet vertical rail (Figure B-4). Set aside the cable retainers, grommets, 2 screws, and 2 cage nuts for later reinstallation.



Figure B-4 Removing the Cable Retainer

B.1.5 Remove Outer Slides

Remove the outer halves of the slides from the cabinet rails (Figure B-5). Set aside the 2 outer slides, 8 screws, and 8 cage nuts for later reinstallation.

Figure B-5 Removing the Outer Slides



I/O Drawer Removal and Replacement B-5

B.1.6 Remove Cable Guides

Remove two cable guides from the rear cabinet vertical rails (Figure B-6). Set aside the 2 cable guides, 2 screws, and 2 cage nuts for later reinstallation.





B.1.7 Remove Cable Support Bracket from Rear Door

Remove the cable support bracket from inside the cabinet back door (Figure B-7). Set aside the cable support bracket for later reinstallation.

Figure B-7 Removing the Cable Support Bracket from the Rear Door



B.2 Reinstallation of Mounting Hardware & I/O Drawer

This section describes the procedure to reinstall an I/O drawer. The basic steps are as follows:

- 1. Remove the cabinet side panel
- 2. Determine the hole locations for mounting
- 3. Loosely attach the outer halves of the slides to the cabinet rails.
- 4. Attach the cable retainer and grommet.
- 5. Install the I/O drawer.
- 6. Attach cable guides.
- 7. Attach the cable support bracket on rear door.
- 8. Identify the I/O connector on CPU drawer.
- 9. Connect I/O cables to CPU drawers.
- 10. Route the I/O cables.
- 11. Connect I/O cables to I/O drawer.

- 12. Connect the Ethernet, ground, and power cables.
- 13. Replace the side panel.

B.2.1 Remove the Cabinet Side Panel

Remove the side panel of the cabinet into which you are going to install the I/O drawer (Figure B-8). You need access to the side rails of this cabinet to properly ground your I/O drawer.

Figure B-8 Remove Side Panel



- 1. Open the front door.
- 2. Pry the top panel off and lift it up. Set it aside.
- 3. For 34U and 41U cabinets, remove the screws at the bottom of the side panel (front and rear). In this illustration, it is the right side panel (as viewed from the front). If your cabinet is a 42U cabinet, use your door key to unlock the side panels and then proceed.

4. Starting at the bottom, pry the side panel away from the cabinet

B.2.2 Determine Hole Locations for Installation

Determine the hole locations for mounting the outer slides, cable retainer, and cable guides (Figure B-9).

Figure B-9 Hole Locations for GS1280 Systems (Front View)



B.2.3 Loosely attach the outer halves of the slides to the cabinet rails.

Install the outer halves of the slides on the cabinet rails (Figure B-10).

Figure B-10 Installing the Outer Slides



- 1. Install cage nuts (8) on the front and rear vertical rails. Be sure they are installed in the correct holes as specified in Section B.2.2
- 2. Install each outer slide half using M6 x 18mm Phillips pan head screws (4 for each slide). Do not completely tighten all the screws until you have installed the I/O drawer in the cabinet.

B.2.4 Attach Cable Retainer and Grommet

Attach a cable retainer and grommet to the front right (as viewed from the front) cabinet vertical rail (Figure B-11).





Refer to the Figure above and install the cable retainer and grommet on the front right (as viewed from the front) cabinet rail as follows:

- 1. Install cage nuts (2) on the front right vertical rails (as viewed from the front).
- 2. Install the cable retainer using 18mm Phillips pan head screws (2).
- 3. Install the grommet on the rail, just below the cable retainer as shown.

B.2.5 Install the I/O Drawer

Tighten one outer slide half, slide the I/O drawer into the cabinet, and then tighten the other outer slide half (Figure B-12).





CAUTION: Two people are required to lift and install the I/O drawer in the cabinet. Estimated weight of the drawer is 143 kg (65 lb).

- 1. Align one outer slide half such that the slots for the screws in the slide half are centered horizontally and vertically with respect to the screws. Then tighten the screws.
- 2. Position the other outer slide half so that it can freely engage the inner slide half of the drawer on that side. Do not tighten the screws for this slide half yet.
- 3. At the rear of the cabinet, lift and rest the front of the I/O drawer onto the outer slide halves, making sure the inner and outer halves of the slides are

aligned. With the drawer horizontally and vertically aligned with respect to the direction of installation, carefully slide the drawer to the front of the cabinet.

4. Once the drawer is aligned and can slide freely, tighten the screws on the loose outer slide half.

B.2.6 Attach Cable Guides

Attach two cable guides to the rear cabinet vertical rails (Figure B-13). The hole locations for mounting this hardware depends on the type of cabinet into which you are installing the I/O drawer.



Figure B-13 Attaching Cable Guides (Rear View)

Install the cable guides on the rear cabinet rails as follows:

- 1. For each bracket, install a cage nut on the rear vertical rails.
- 2. Install the cable retainer using an M6 x 18mm Phillips pan head screw.

B.2.7 Attach Cable Support Bracket on Rear Door

Install the cable support bracket inside the cabinet back door (Figure B-14).

Figure B-14 Attaching Cable Support Bracket on Rear Door


B.2.8 Connect I/O Cable(s) to I/O Drawer

Connect the I/O cable to an I/O riser in the drawer and drape the cable appropriately around the guides (Figure B-15).



Figure B-15 I/O Cable Draping (GS1280)

Connect each I/O cable to the I/O drawer as follows:

- 1. From the rear of the cabinet, slide out the I/O drawer.
- 2. Connect the I/O cable to the I/O riser connector on the back of the drawer.
- 3. Drape the cables on the I/O drawer guides as shown.

B.2.9 Connect Ethernet, Ground, and Power Cables

After installing the I/O cable(s), plug the server management Ethernet cable into the server management HUB (Figure B-16). Then install the power cables to the PDU.



Figure B-16 Ethernet, Ground, and Power Cables

Note: Create a proper service loop. Make sure you leave enough Ethernet and power cable loose to allow full extension when the drawer needs to be serviced.

- 1. Plug the Ethernet cable into the I/O drawer and route the cable up the right vertical rail to the HUB. Connect the cable to the HUB.
- 2. Route the ground cable to the vertical rail, and, using the self-tapping 5.5mm x 12mm screw, attach the cable to the rear surface of the vertical rail as shown.
- 3. Install the two power cords into the drawer and plug them into the cabinet's power distribution unit (PDU) as shown in Figure B-17. 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. Slide the drawer in.



Figure B-17 PDU Connections

B.2.10 Replace the Side Panel

Working from the side of the system, return the side panel to the cabinet (Figure B-18).



Figure B-18 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, use your system key to secure panels to rails.
- 3. Press the top panel back onto the cabinet frame.

Appendix C Storage Shelf Removal and Replacement

This appendix describes the steps for removing and replacing storage shelves. Figure C-1 shows a storage shelf and a mounting rail.



Figure C-1 Storage Shelf

C.1 Remove a Storage Shelf

- 1. At the rear of the cabinet disconnect the two interface and two power cables. Unplug the interface cables from the I/O drawer and the power cables from the PDU. Label these cables and remove them from the cable management bracket.
- 2. At the front of the cabinet, loosen the four captive screws and slide the shelf from the cabinet.
- 3. At the front of the cabinet remove the two screws at the end of each rail. Retain 4 screws for reinstallation.
- 4. At the rear of the cabinet remove the two square nuts and washers at the end of each rail. Retain 2 rails and 4 sets of nuts and washers.

C.2 Replacement of a Storage Shelf

- 1. Position the two mounting rails in the cabinet with the screw studs inserted in the mounting holes at the rear of the cabinet. Fasten the rear of each rail to the cabinet with two square nuts and washers.
- 2. At the front of the cabinet, fasten the rail to the cabinet with two screws at the end of each rail.
- 3. Slide the storage shelf into the cabinet on the two rails. Tighten the four captive screws on the front of the shelf.
- 4. Reattach the I/O interface cable(s) and two power cables.

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