HP AlphaServer GS1280

Dual Power Option Upgrade

Order Number: EK–128DP–UP. C01

This manual is for field service engineers and self-maintenance customers installing a dual-power option upgrade to HP *AlphaServer* GS1280 systems.

Hewlett-Packard Company

July 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.

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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

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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* GS1280 systems who are upgrading a GS1280 Model 8 system to include the dual-power option.

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 four chapters.

- **Chapter 1, Overview**, introduces you to the GS1280 Dual Power upgrade, its kits and contents, and the basic steps of the upgrade procedure.
- **Chapter 2, Install the Dual-Power Upgrade for the Model 8**, guides you through checking the kit, installing new power components and cabling, and restoring power to the system.
- **Chapter 3, Install the Dual-Power Upgrade for the Model 16,** tells how to check the kit, install new power components and cabling, and restore power to the system.
- **Chapter 4, Install the Dual-Power Upgrade for the Model 32,** tells how to check the kit, remove PCI and storage components from the old power cabinet, remove the old power cabinet, install the new power cabinet, reinstall PCI and storage components from the old power cabinet in the new power cabinet, re-cable all components, and restore power to the system.
- **Chapter 5, Install the Dual-Power Upgrade for the Model 64,** tells how to check the kit, remove PCI and storage components from the old power cabinet, remove the old power cabinet, install the new power cabinet, reinstall PCI and storage components

from the old power cabinet in the new power cabinet (and expansion cabinet, if necessary), re-cable all components, and restore power to the system.

- **Chapter 6, Verify with Q-Vet,** gives you procedures to verify the system upgrade with Q-Vet.

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

You can reach this from the external HP homepage.

Table 1 HP AlphaServer ES47/ES80/GS1280 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
Getting Started with Partitions	Y	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 Upgrade	Y[1]	
HP AlphaServer ES80 Upgrade	Y[1]	
HP AlphaServer ES47 Trade-ups	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 dual AC power option provides the capability to connect an HP *AlphaServer* GS1280 to two separate AC feeds.

The feeds can be direct from the power utility, or they can be a combination of utility feeds and UPS or generator feeds. During normal operation, the system will receive power from both feeds. If one feed fails, the system will continue to receive power from the remaining feed with no interruption in system operation.

Chapter 2
Install the Dual-Power Upgrade for the Model 8

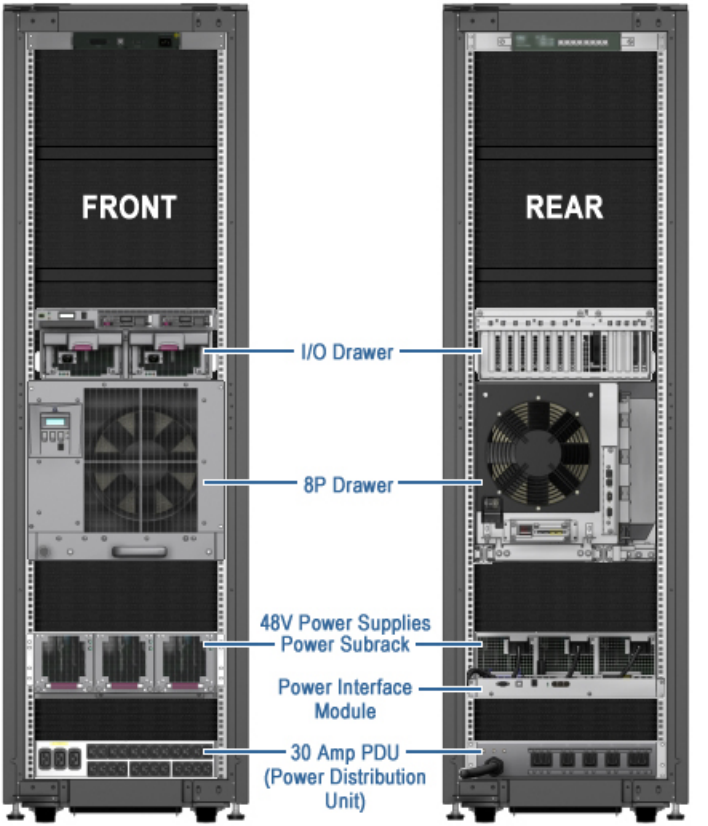
This chapter tells how to install the dual-power upgrade for an HP *AlphaServer* GS1280 Model 8 system. Sections include:

- "Before" and "After" pictures of dual-power upgrade for Model 8 systems
- Check kit contents.
- Perform an orderly shutdown of the system, and remove system power.
- Install side rails for the new 48V subrack
- Install the new 48V subrack
- Install the new power supplies
- Remove cabling from the Power Interface Assembly (PI), remove and set aside PI
- Install the dual power chassis
- Cable and Reattach the Power Interface Assembly (PI)
- Install the second PDU (ordered separately)
- Recable power cables from I/O to the two PDUs
- Cable the 48V junction box to the power subracks
- Install the junction box in the chassis
- Cable the 8P drawer to the junction box and the PI
- Restore power and check LEDs

2.1 “Before” and “After” Pictures of Dual-Power Upgrade for Model 8 Systems

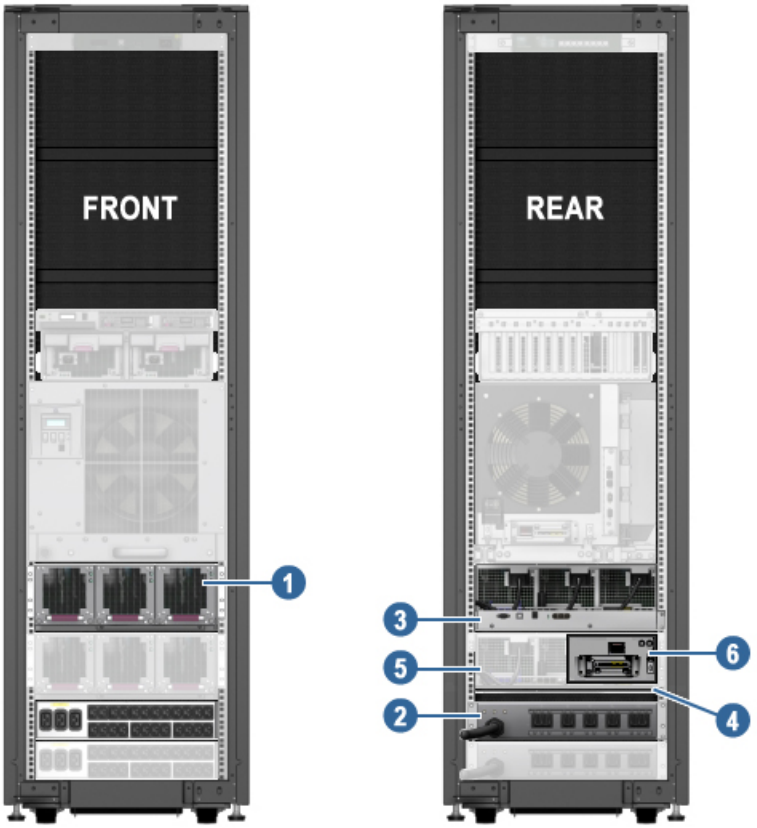
These pictures show the “before” and “after” setup for a dual-power upgrade on a GS1280 Model 8 system.

Figure 2–1 Typical GS1280 8P System Before Dual-Power Upgrade



WARNING: Do NOT install using just these diagrams. Power must be removed, cables detached and reattached, and so forth.

Figure 2–2 Added Components for Model 8 System After Dual-Power Upgrade



1. Second set of 48V power supplies.
2. Second 30-amp Power Distribution Unit (PDU)
3. Power interface module (PI) must be moved up to make room
4. Cable wire frame
5. Dual-power chassis
6. Dual power junction box

2.2 Check Kit Contents

Before you begin systematic shutdown of your system, check your upgrade kit contents to be certain you have all necessary components.

Table 2–1 GS1280 Model 8 Dual AC Input Power Upgrade Kit Contents (3X-H7514-AC)

No	Part Number	Description
1	70-41157-01	Dual-power junction box, screws and cables.
3	30-56638-01	48V power supplies
1	3X-H7513-CA	Shelf for new 48V power supplies, power interface assembly (PI), side rails, and cables.
2	17-05179-01	Envelope containing two harness assemblies, 15 CND, 18 AWG, 3CONN

NOTE: In addition to this kit, you must order a geography-specific power distribution unit (PDU) to provide dual AC power. The dual AC option kit does NOT include a PDU. It must be ordered separately. (3X-H7606-AA/AB).

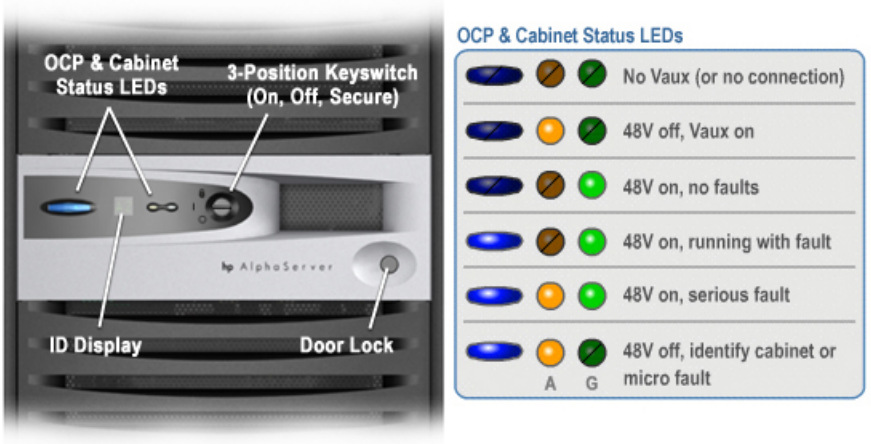
Depending on the variant of the 3X-H7513 -xA component of your kit, you may have an extra power interface unit (PI) and extra cables. If so, remove the PI and extra cables (part numbers 17-04846-02, 17-05151-02, 17-05116-02, and 17-04117-02) and set them aside as spares. You will not need them for the installation.

Keep the signal cable and the envelope with the two power harness cables for use in the installation.

2.3 Shut Down System Power

Back up all important data. Shut down all applications and shut down the operating system in all partitions. Turn off the power at the cabinet OCP, switch PDU breakers to off, and unplug the system.

Figure 2–3 Turn Off Power at Cabinet OCP Switch

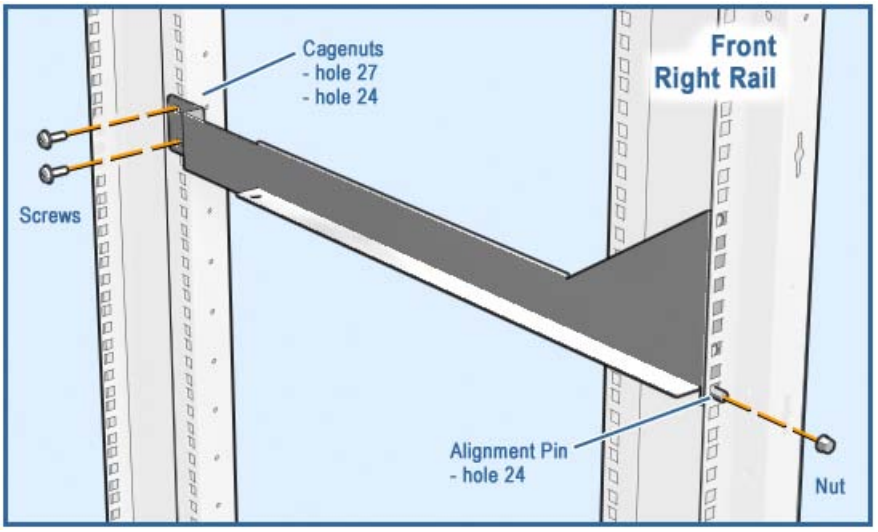


7. Back up all important data on the system.
8. Shut down all applications and shut down the operating system in all partitions.
9. Turn off power to the cabinet at the OCP, turning the 3 position switch to 0 (see Figure 2–3).
10. Wait for the orderly shutdown to complete.
11. At the rear of the machine, turn the breaker switch on the PDU to the off position.
12. Unplug the cabinet from its power source and wait 5 minutes for any residual power to dissipate.

2.4 Install Side Rails for New 48V Subrack

Install the side rails to hold the new 48V subrack. (You may have to move the old 48V subrack and power supplies to meet the spacing requirements for the PI at the rear of the machine.)

Figure 2–4 Installing Side Rails for New 48V Subrack

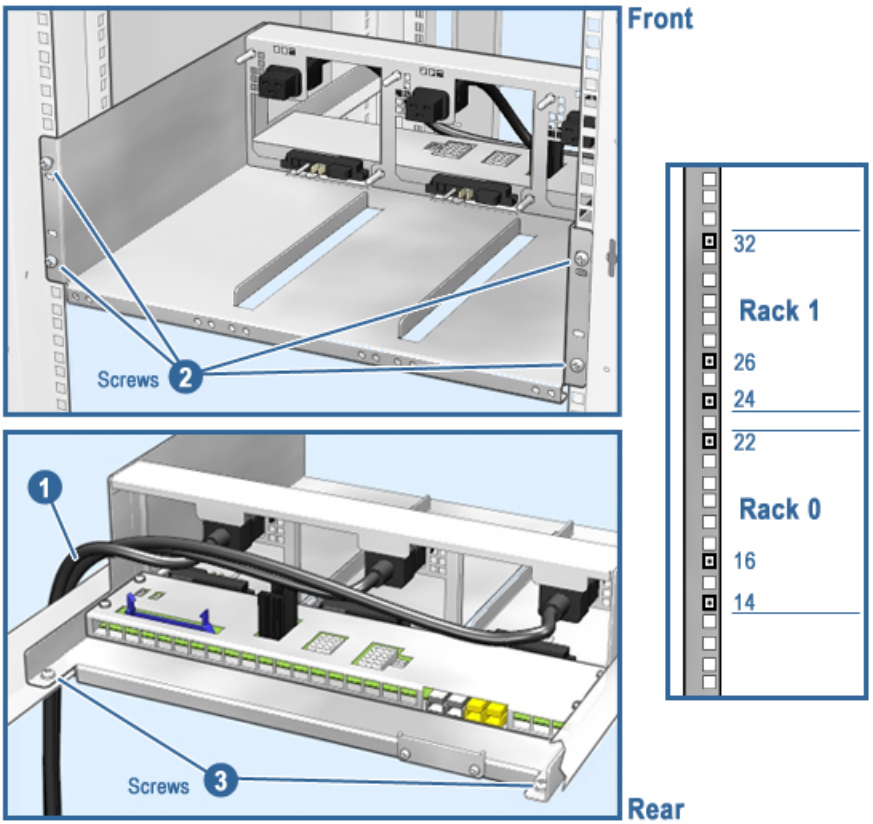


1. At the front of the machine, check that the existing 48V power subrack (Rack 0) is correctly positioned, with screws inserted as shown on the next page in Figure 2–5. If it is not, disconnect the power cords from the back of each power supply, and set them aside. Move the side rails and subrack to the correct position and reinstall the power supplies. Reconnect the cables to the power supplies.
2. Unpack the Phillips head screws and nuts supplied with the subrack assembly.
3. Select the two side rails from the kit. They will support the subrack when it is installed.
4. At the front of the machine, place each side rail in position by inserting the alignment pin (threaded M6 stud) in hole 24. (NOTE: if Rack 0 is in the proper position, hole 24 will be the first hole you can see immediately above the subrack molding for Rack 0.) Attach the M6 nut to the alignment pin using a metric wrench. (See Figure 2–4.)
5. At the rear of the machine, attach each side rail to the rear rail at holes 24 and 27 using the M6 Philips screws and locking nuts. (See Figure 2–4).

2.5 Install the New 48V Subrack

Install the new 48V subrack.

Figure 2–5 Installing the New 48V Subrack

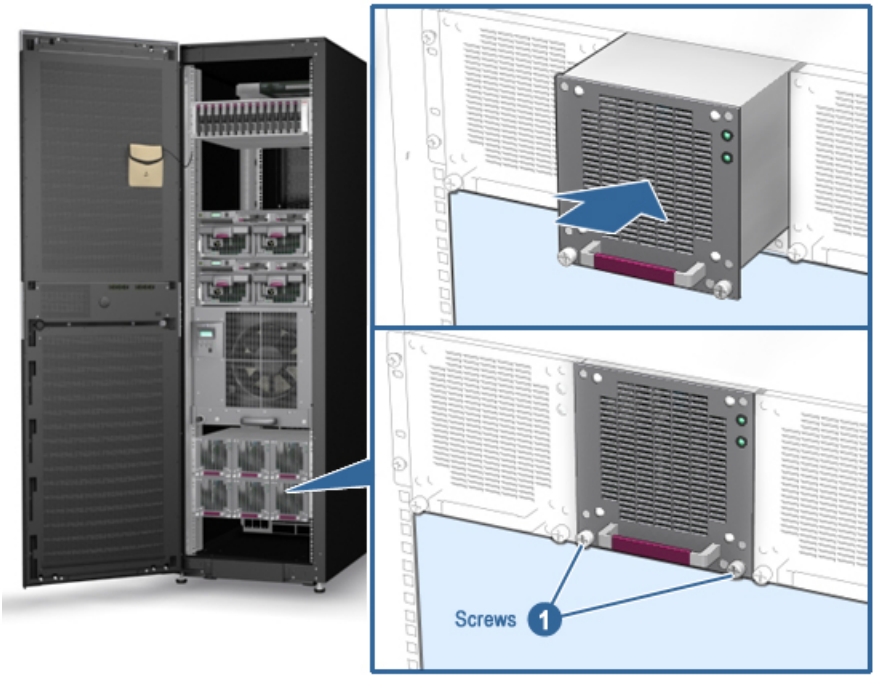


1. At the front of the machine, slide in the subrack, guided by the newly installed side rails. Place the cables at the back of the subrack over the side rail, between the side rail and the side of the cabinet, as shown in Figure 2–5.
2. At the front of the machine, using the four M5 Phillips screws, screw the front of the subrack to the vertical rails as shown in Figure 2–5.
3. At the rear of the machine, use two of the M5 Phillips screws to screw the back of the subrack to the newly installed side rails (see Figure 2–5).

2.6 Install the New Power Supplies

Install the new power supplies in the subrack.

Figure 2–6 Installing the New Power Supplies

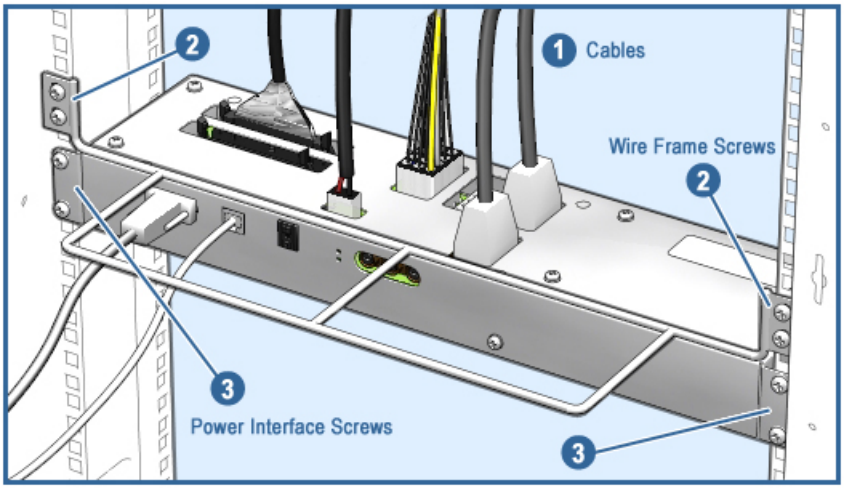


1. Slide the new power supplies in place and fasten them with their captive screws to the newly installed Rack 1.

2.7 Remove Cabling from the Power Interface Assembly (PI), Remove and Set Aside PI

At the rear of the machine, remove the cabling from the existing power interface assembly, to make room for the dual-power box.

Figure 2–7 Remove Cabling from the Power Interface Assembly (PI)

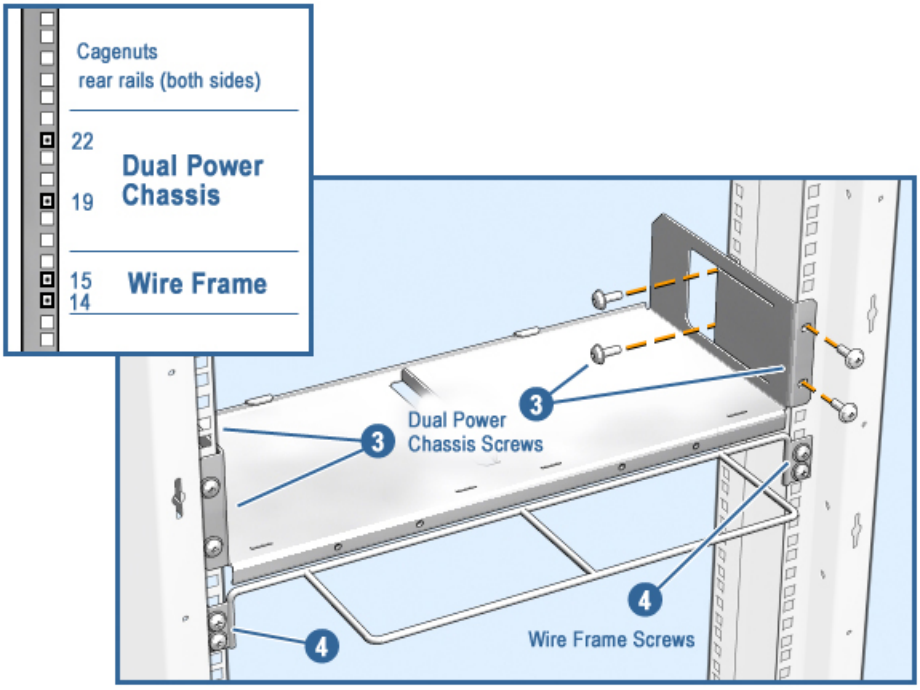


1. Disconnect the cables connecting to the PI assembly. Remember their placement.
2. Remove the four Phillips head screws holding the wire frame above the PI from the right and left rails. Remove the wire frame, setting it aside with its screws.
3. Remove the four Phillips head screws holding the PI assembly to the frame and set the screws and the PI aside for the time being.

2.8 Install Dual Power Chassis

Install the wire frame and chassis for the dual-power junction box.

Figure 2–8 Install the Wire Frame and Chassis for the Junction Box

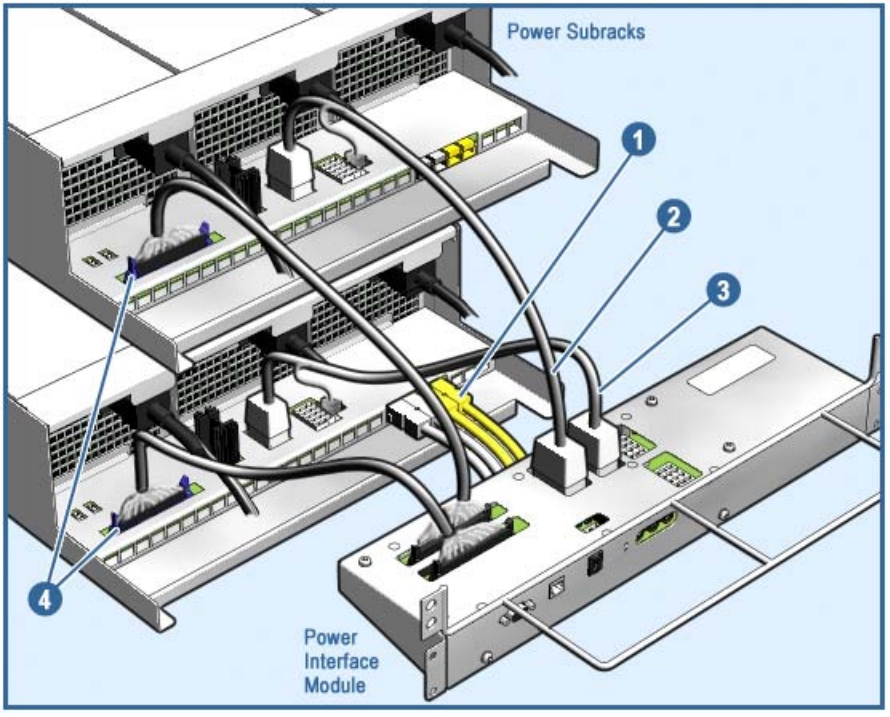


1. Assemble the parts from the box containing the junction box chassis at the rear of the machine. If the junction box comes attached to the chassis, it is simpler to take it apart and install the chassis before replacing the PI and recabling. Place the junction box and cables to one side.
2. Place the eight hex nuts in position to receive the screws to hold the junction box chassis, as shown in the detail in Figure 2–8.
3. Screw the chassis in place as shown in Figure 2–8.
4. Take the wire frame from the kit and install it as shown in Figure 2–8.

2.9 Cable and Reattach the Power Interface Assembly (PI)

Attach cables from the old and new power subracks to the PI, and reinstall.

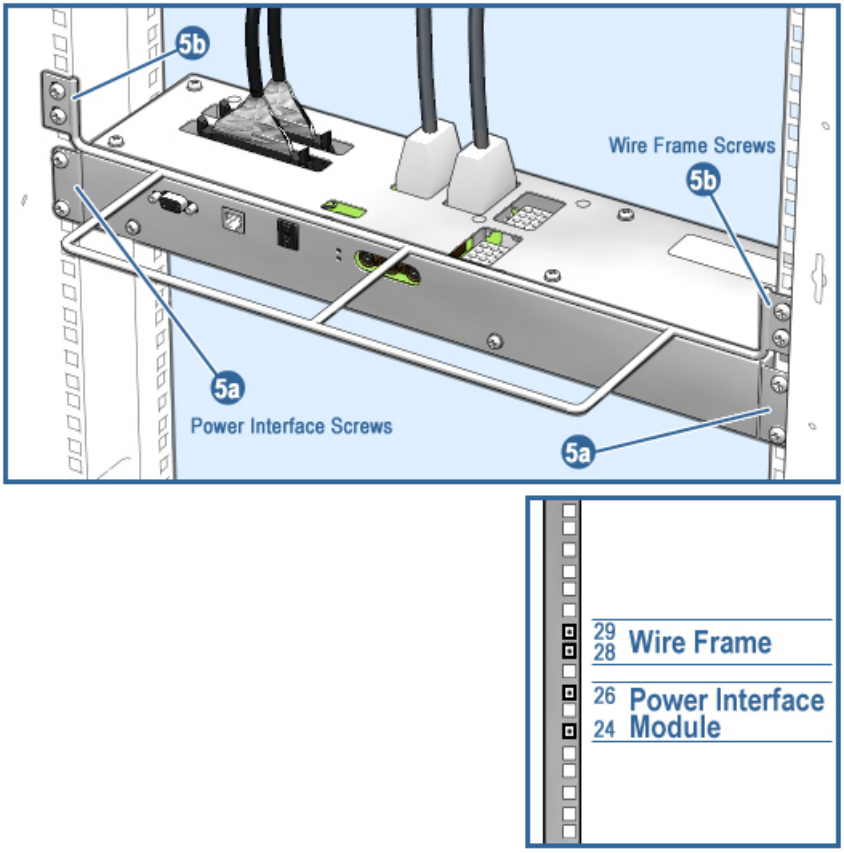
Figure 2–9 Cabling the Old and New Power Shelves to the PI



1. Unplug the 48V power cord (that goes to the 8P drawer) from the bottom power shelf and place it to the side of the machine.
2. Sitting at the rear of the machine, take the power interface assembly (PI) from where it was set aside previously and put it in your lap. (It is easier to do the cabling before the PI is actually installed in the machine.) Remove the existing 15-position harness from the PI and the first H7513 power tray (part number 17-04846-02), and replace it with the new harness (part no. 17-05179-01), as shown in Figure 2–9. Notice the position of the two connectors at the Y end of the cable harness, and where they fit in the back of the lower power tray.

3. Install the second new harness (part no. 17-05179-01) in the second 15-position outlet on the PI and the new H7513 power tray, as shown in Figure 2–9. Again, notice the position of the two connectors at the Y end of the cable harness, and where they fit in the back of the upper power tray.
4. Connect the signal interface cables between the PI and the H7513 power trays. (There is a new one from the kit, and one was removed from its attachment to the PI in Section 2.7.) See Figure 2–9.
5. Move the PI assembly to the rail holes shown in Figure 2–10, and replace the four Phillips head screws to hold the PI assembly in the new position (5a). Also, replace the wire frame above the PI assembly in the rail holes shown (5b).

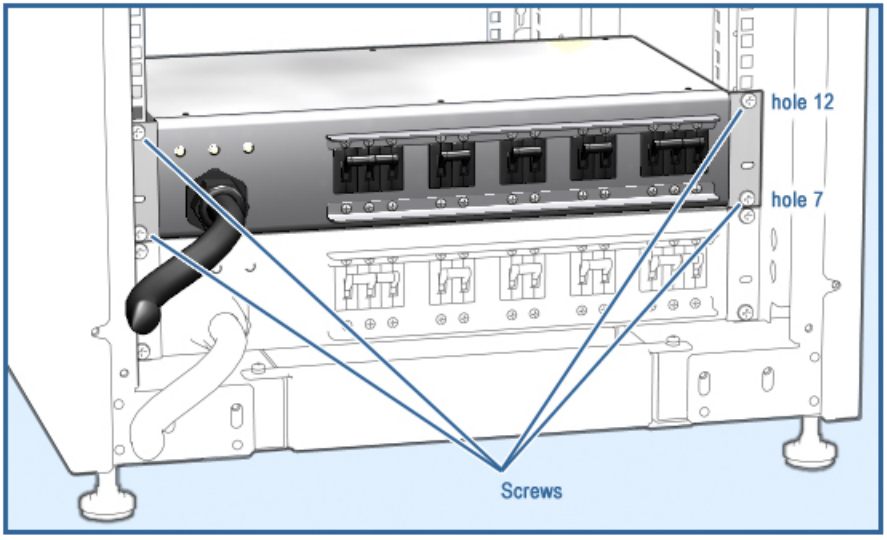
Figure 2–10 Attach the PI and Wire Frame to the New Rail Holes



2.10 Install the Second PDU (Ordered Separately)

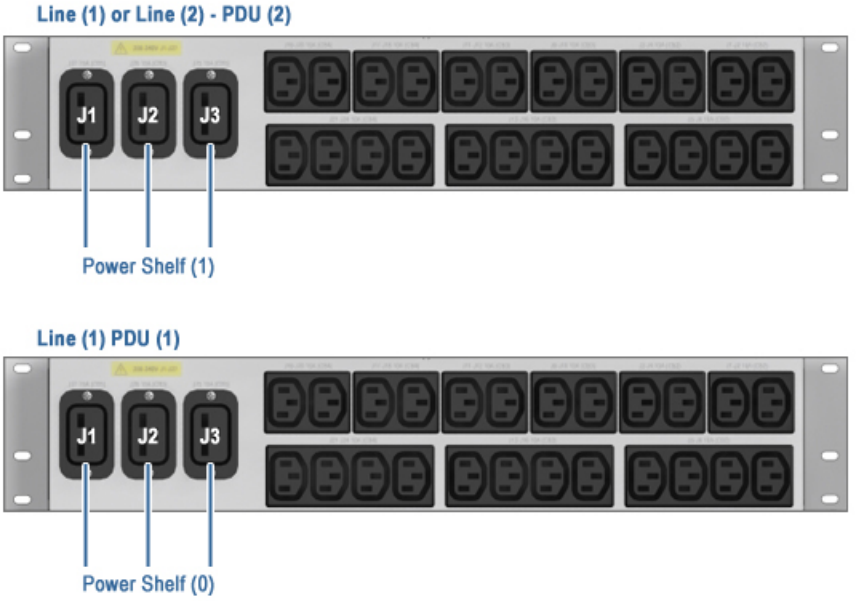
At the rear of the machine, slide in the second Power Distribution Unit (PDU), ordered separately.

Figure 2–11 Installing the Second PDU



1. Attach the PDU rear mounting brackets according to the instructions provided with the PDU.
2. Slide the second PDU in above the first and screw it in place (holes 7 and 12 on the side rails at the back). See Figure 2–11.
3. Attach the cables from the old and new power subracks to the PDUs. Attach the cables from the lower subrack to the lower PDU. Attach the cables from the upper subrack to the upper PDU. (See Figure 2–12)

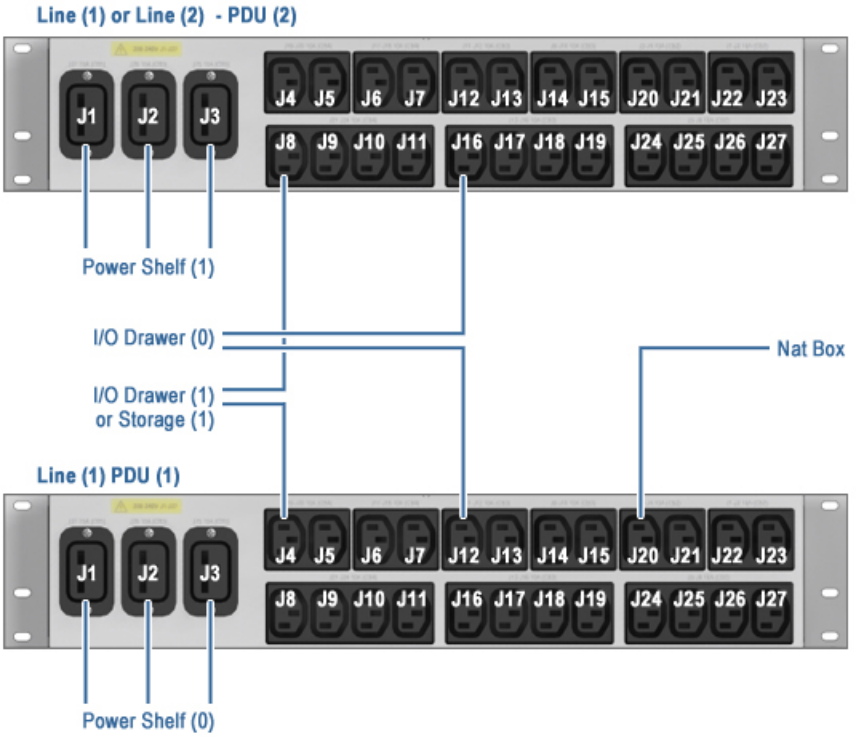
Figure 2–12 Attach Cable from Subracks (Power Shelves) to PDUs.



2.11 Recable Power Cables from I/O to the Two PDUs

To supply 48V power redundancy to the I/O, switch half of the circuits to the new PDU.

Figure 2–13 Switching I/O Circuits to the new PDU

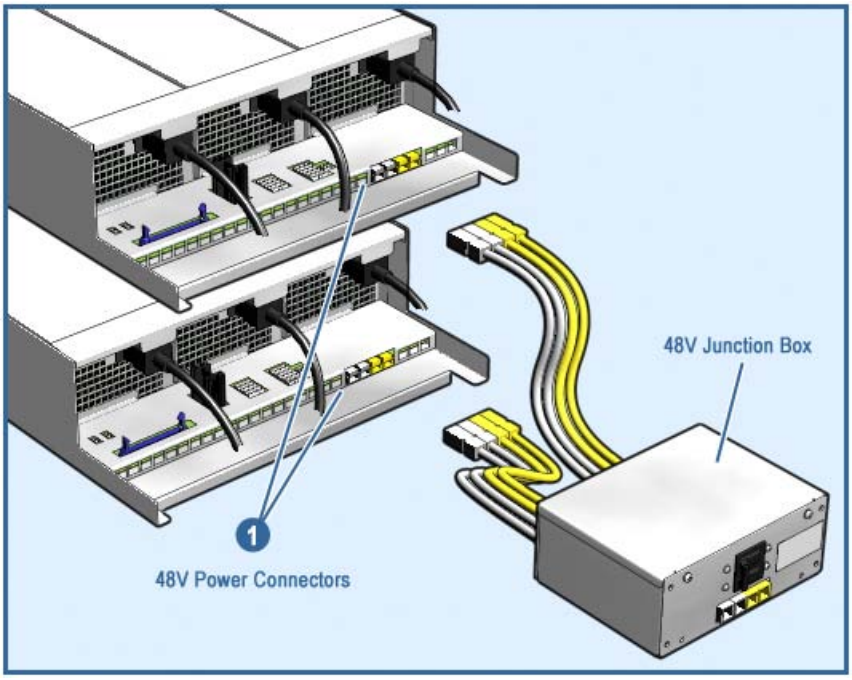


1. Recable any I/O drawers or connections that were attached to the old (lower) PDU so that they can receive power from both the upper and lower PDU. An example of recabling for a typical configuration of I/O in a main cabinet is shown in Figure 2–13.

2.12 Cable the 48V Junction Box to the Power Subracks

At the rear of the machine, attach the cables from the 48V junction box to the back of the power subracks.

Figure 2–14 Cabling the Junction Box to the Power Subracks

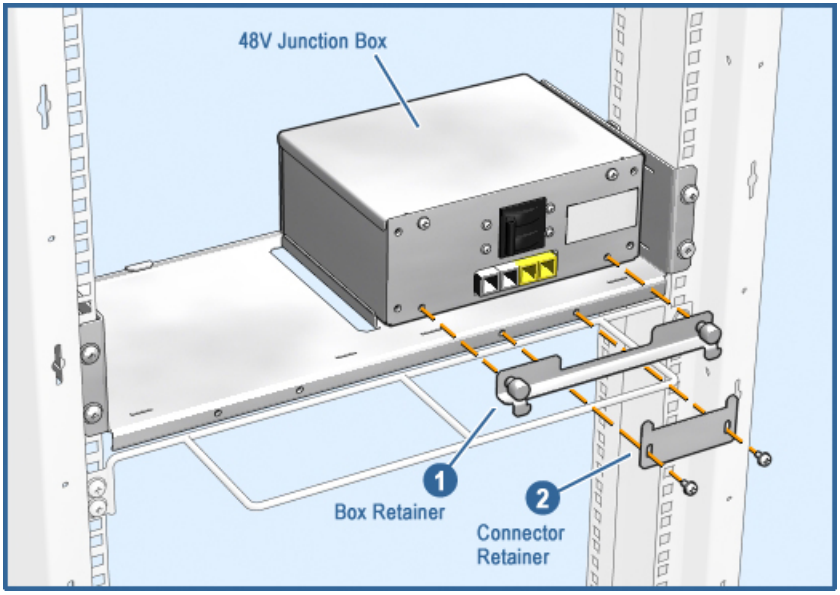


1. Holding the junction box in your lap, slide the junction box cables between the junction box chassis and the PI and cable it to the power subracks as shown in Figure 2–14.

2.13 Install the Junction Box in the Chassis

Place the junction box on the chassis and screw the box retainer into the junction box. Then install the connector retainer bracket at the front of the chassis.

Figure 2–15 Installing the Junction Box

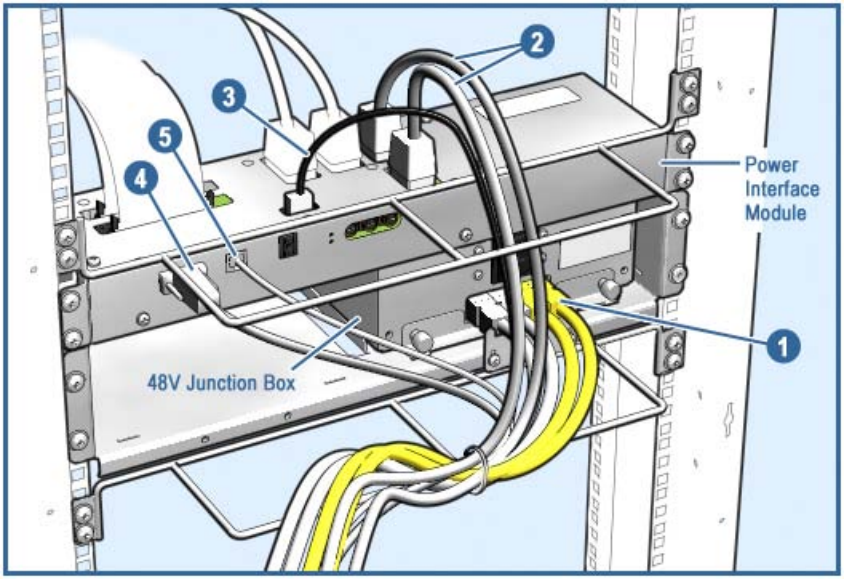


1. Connect the box retainer to the 48V junction box with the small screws, as shown in Figure 2–15.
2. Install the connector retainer bracket to the front rail of the chassis using the small screws.

2.14 Cable the 8P Drawer to the PI and Junction Box

Attach the 48V power cord from the 8P drawer to the front of the junction box, and the Vaux and fan power cables from the 8P drawer to the PI.

Figure 2–16 Cabling the 8P Drawer to the PI and Junction Box



1. Route the 48V power cord that goes to the 8P drawer (previously set to one side) to the front of the junction box. See Figure 2–16.
2. Connect the fan cables from the 8P box to the PI.
3. Connect the Vaux cable from the 8P box to the PI.
4. Connect the MBM signal interface cable to the PI.
5. Connect the cabinet OCP cable to the PI.

2.15 Restore Power and Check LEDs

Plug the two PDUs into their chosen outlets. Turn on the breaker switches on the two PDUs. Turn on the 3-position cabinet OCP switch to "On: (1). All LEDs should light green.

Figure 2–17 Restore Power at Cabinet OCP

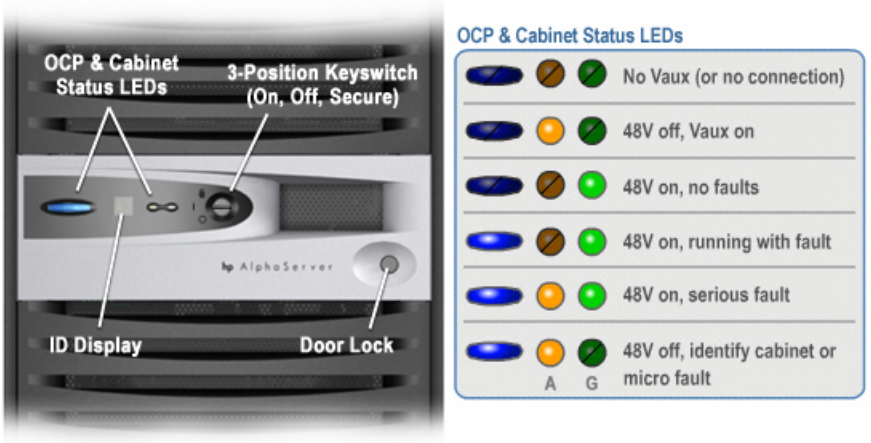


Table 2–2 OCP LED Table[1]

Blue LED	Amber LED	Green LED	Indication
Off	Off	Off	No Vaux (or no connection)
Off	On	Off	Vaux on, bulk power off
Off	Off	On	Bulk power on, no errors
On	Off	On	Bulk power on, running with fault
On	On	On	Bulk power on, serious fault
On	On	Off	Bulk power on, identify cabinet or micro fault

[1] The left LED is blue, the middle LED is amber, and the right LED is green.

1. Plug in the power cords from the two PDUs to the power outlets chosen for them.
2. Turn on the breaker switches on the two PDUs.
3. Turn the three-position keyswitch on the front cabinet door to “On” (1). See Figure 2–17.
4. All of the LEDs should light green. If they do not, return to Section 2.1 and remove power from the system. Check to make sure that all cable connections are secure.
5. Once LEDs are on, proceed to Chapter 6 for verification procedures.

Chapter 3
Install the Dual-Power Upgrade for the Model 16

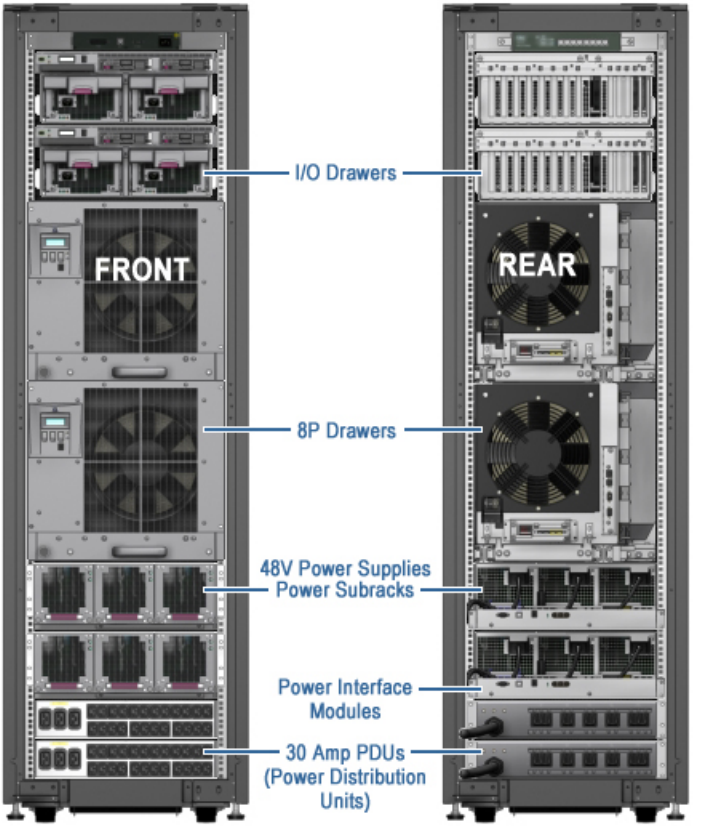
This chapter tells how to install the dual-power upgrade for a GS1280 Model 16.

- "Before" and "After" Pictures of Dual-Power Upgrade for Model 16 Systems
- Check kit contents
- Perform an orderly shutdown of the system, and remove system power
- Install the expander cabinet (if necessary)
- Remove cabling from lower power interface module (PI), remove and set aside
- Set aside upper PI
- Install first dual power chassis in main cabinet
- Cable and reattach the upper Power Interface Assembly (PI)
- Recable power cables from I/O to the two PDUs
- Cable the 48V junction box to the power subracks in the main cabinet
- Install the first junction box in the chassis
- Cable the lower 8P drawer to the PI and junction box in the main cabinet
- Install the two new PDUs (ordered separately) in the expansion cabinet
- Install side rails for the new 48V subracks in the expansion cabinet
- Install the new 48V subracks in the expansion cabinet
- Install the new power supplies in the expansion cabinet
- Install second dual power chassis in the expansion cabinet
- Cable and attach the power interface assembly (PI) in the expansion cabinet
- Cable second 48V junction box to the power subracks in the expansion cabinet
- Install second junction box in the chassis in the expansion cabinet
- Cable the upper 8P drawer to the PI and junction box in the expansion cabinet
- Restore power and check LEDs

3.1 "Before" and "After" Pictures of Dual-Power Upgrade for Model 16 System

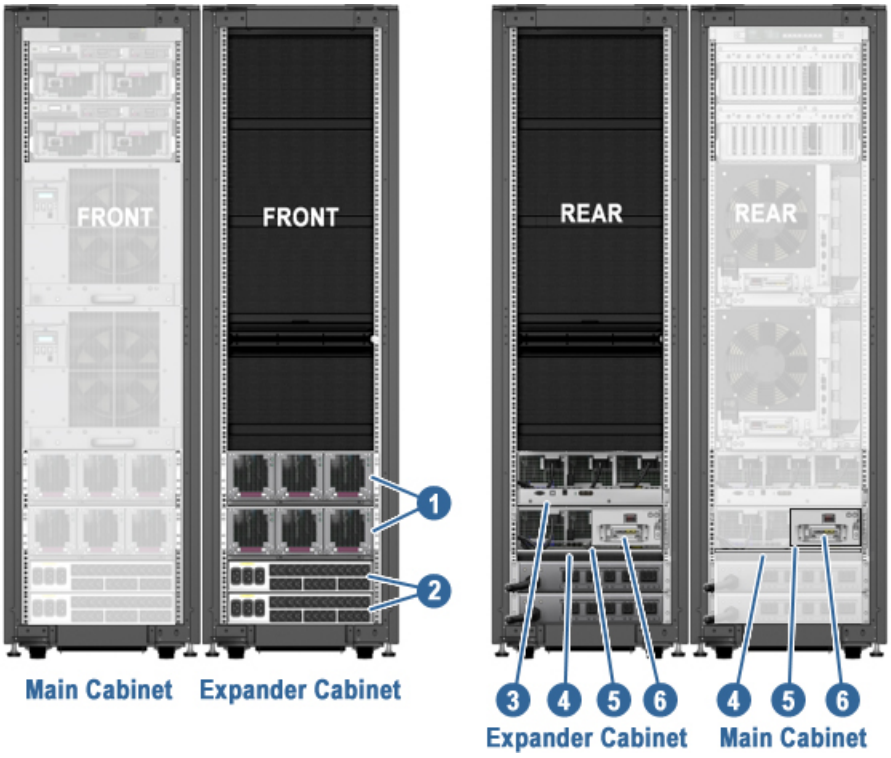
These pictures show the "before" and "after" setup for a dual-power upgrade on a GS1280 Model 16 system.

Figure 3–1 Typical 16P System Before Dual-Power Installation



WARNING: Do NOT install using just these diagrams. Power must be removed, cables detached and reattached, and so forth.

Figure 3–2 Added Components for Model 16 System After Dual-Power Upgrade



1. Two new sets of 48V power supplies
2. Two new 30-amp Power Distribution Units (PDUs)
3. Lower power interface module (PI) in main cab moved to expander cab
4. Two new cable wire frames: one in main cab, one in expander cab
5. Two new dual-power chassis: one in main cab, on in expander cab
6. Two new dual-power junction boxes, one in main cab, one in expander cab

3.2 Check Kit Contents

Before you begin systematic shutdown of your system, check your upgrade kit contents to be certain you have all necessary components.

Table 3–1 GS1280 Model 16 Dual AC Input Power Upgrade Kit Contents (3X-H7514-AB)

No	Part Number	Description
2	70-41157-01	Dual-power junction boxes, screws and cables.
6	30-56638-01	48V power supplies
2	3X-H7513-CA	Shelves for new 48V power supplies, power interface assembly (PI), side rails, and cables.
2	17-05179-01	Plastic bags containing four harness assemblies, 15 CND, 18 AWG, 3CONN

NOTE: In addition to this kit, you must order two geography-specific power distribution units (PDUs) to provide dual AC power. The dual AC option kit does NOT include the two extra PDUs. They must be ordered separately. (3X-H7606-AA/AB).

NOTE ALSO: The first dual-AC junction box will fit in existing space in the main cabinet. You will need an extra 11U of space for the second dual-AC junction box in another cabinet. If you do not have extra space in your existing cabinets, you will also need an expansion cabinet, part no. 3X-H9A45-ZA.

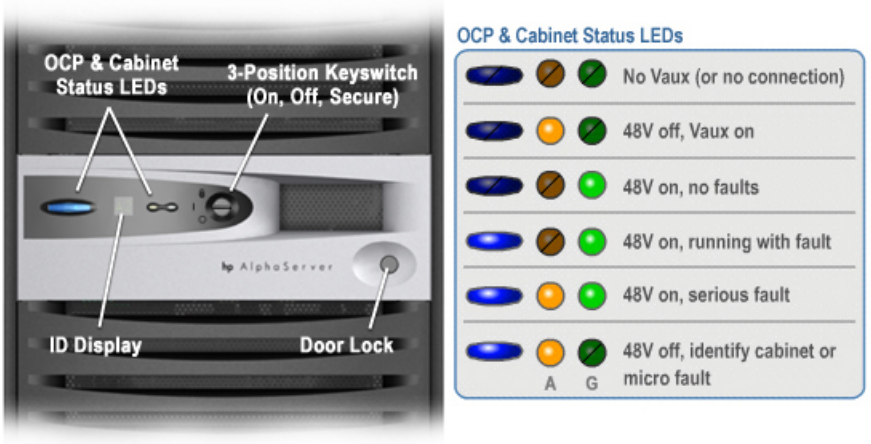
Depending on the variant of the 3X-H7513-xA component of your kit, you may have extra power interface units (PIs) and extra cables. If so, remove the two PIs and extra cables (part numbers 17-04846-02, 17-05151-02, 17-05116-02, and 17-04117-02) and set them aside as spares. You will not need them for the installation.

Keep the signal cable and the plastic bag with the two power harness cables for use in the installation.

3.3 Shut Down System Power

Back up all important data. Shut down all applications and shut down the operating system in all partitions. Turn off the power at the cabinet OCP, switch PDU breakers to off, and unplug the system.

Figure 3–3 Turn Off Power at Cabinet OCP Switch

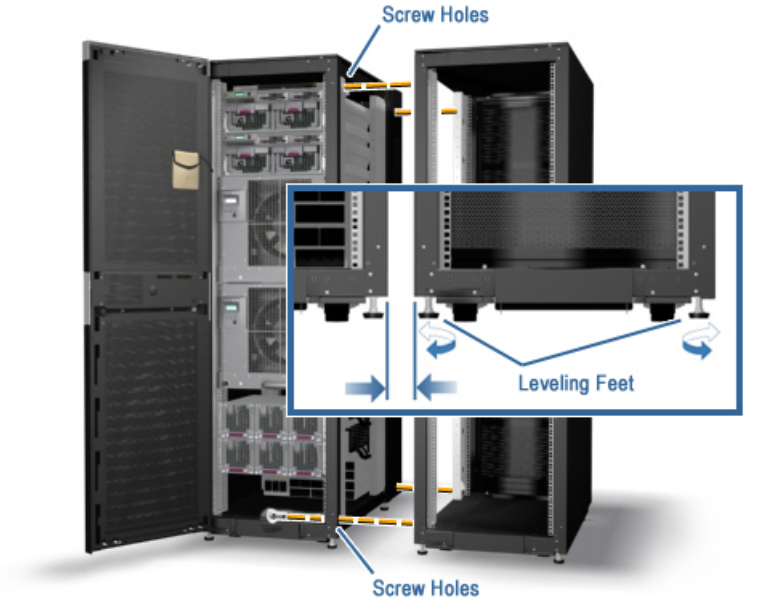


1. Back up all important data on the system.
2. Shut down all applications and shut down the operating system in all partitions.
3. Turn off power to the cabinet at the OCP, turning the 3 position switch to 0 (see Figure 3–3).
4. Wait for the orderly shutdown to complete.
5. At the rear of the machine, turn the breaker switch on the PDU to the off position.
6. Unplug the cabinet from its power source and wait 5 minutes for any residual power to dissipate.

3.4 Install the Expander Cabinet (If Necessary)

HP AlphaServer GS1280 Model 16 systems have power equipment and two 8P drawers all installed in one cabinet. To add the new dual-power option for this configuration, you may need to install an expander cabinet to hold the dual-power supply equipment for the second 8P drawer.

Figure 3–4 Install Expander Cabinet (If Necessary)



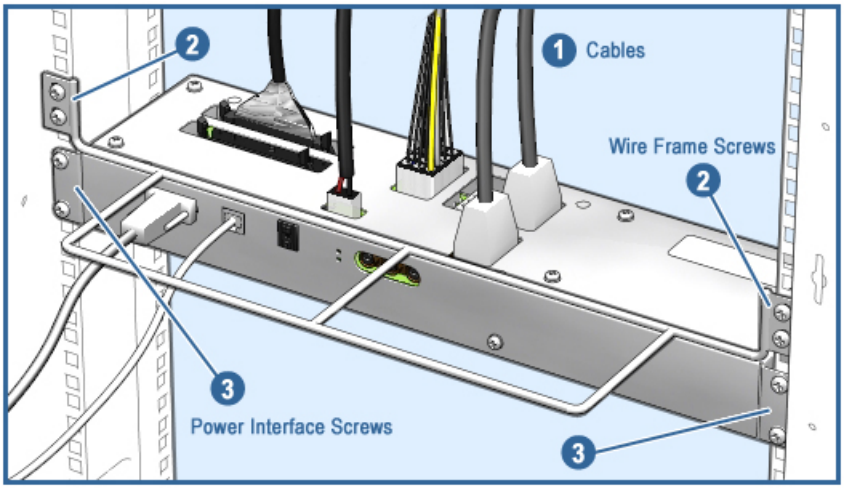
You will be able to intall one dual-power chassis, junction box, and wire frame in existing space in the main cabinet. You will also need 11U of space to install the second set of PDUs, power supplies, and the second dual-power chassis, junction box, and wire frame. You may already have this space in an existing cabinet, or you may need to order an expansion cabinet. If so, install the new expander cabinet as follows:

1. Determine the location of the expander cabinet relative to other cabinets making up the system. In general, it is best for cabling to place the expander cabinet for the dual-power upgrade to the right of the front of the main cabinet.
2. Remove the panels, either right or left or both, of the expander cabinet. (For example, if you are moving an I/O cabinet further to the right to make room for the dual-power expander cabinet, you would want to remove both the right and left panels of the expander cabinet to allow for cabling the upper 8P drawer (to the left) and the I/O cabinet (to the right) of the dual-power upgrade expansion cabinet.
3. Roll the expander cabinet as close as possible to its neighboring cabinet and align the front and rear surfaces.
4. Align the cabinet heights by adjusting the leveling feet.
5. Use the four screws from the joining kit (Part No. 70-40120-02) to join the cabinets together.
6. Connect the ground wire to both cabinets. Set the expander cabinet ID number on the front door OCP push wheel.

3.5 Remove Cabling from the Lower Power Interface Assembly (PI), Remove and Set Aside PI

At the rear of the main cabinet, remove the cabling from the lower power interface assembly (PI), and remove it to make room for the dual-power box.

Figure 3–5 Remove Cabling from the Power Interface Assembly (PI)

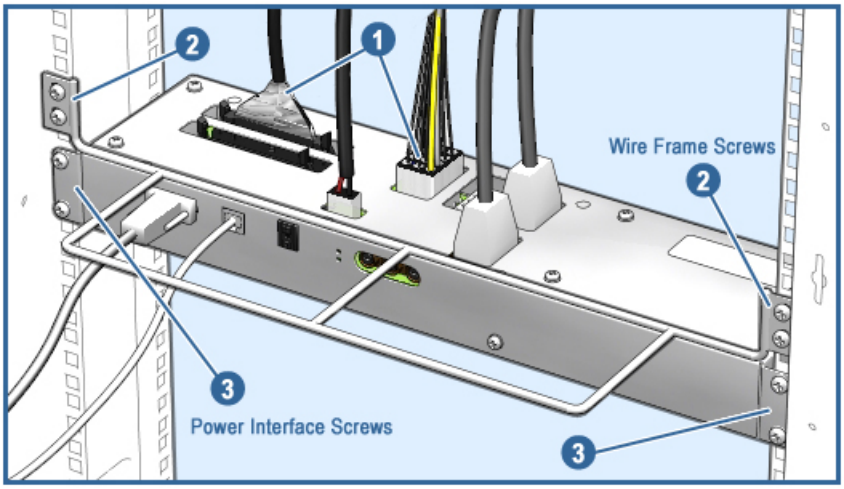


1. At the rear of the main cabinet, disconnect the cables connecting to the lower power interface assembly. Remember their placement.
2. Remove the four Phillips head screws holding the wire frame above the power interface assembly from the right and left rails. Remove the wire frame, setting it aside with its screws. They will eventually be installed in the expander cabinet.
3. Remove the four Phillips head screws holding the power interface assembly (PI) to the frame and set the screws and the PI aside for the time being. They will eventually be installed in the expander cabinet.

3.6 Set Aside Upper Power Interface Assembly

To make room to install the dual-power chassis, uncable the upper power interface assembly (PI) from the subrack. Leave other cables in place and let the PI rest against the rear door of the main cabinet.

Figure 3–6 Uncable Upper PI from Subrack

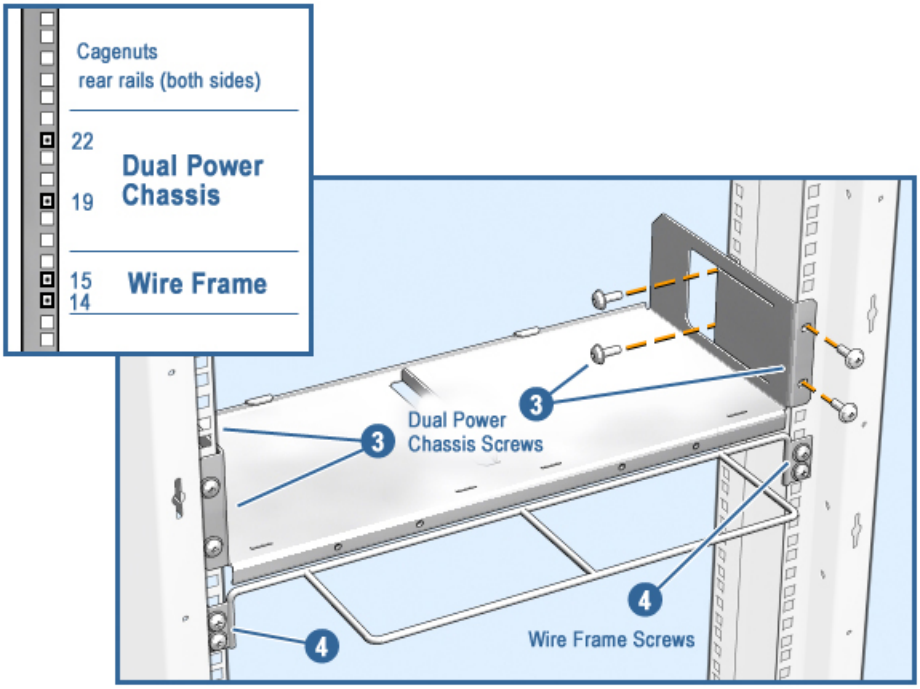


1. At the rear of the main cabinet, uncable the signal cable and power harness from the lower power interface assembly (PI) and remove the power cable connecting the PI to the back of the upper power rack. Leave the other cables in place.
2. Remove the wire frame and set it aside.
3. Remove the PI from the rails and let it dangle by its cables by the rear main cabinet door. (It will be reinstalled, but you need the room to install the junction box chassis.)

3.7 Install First Dual Power Chassis in Main Cabinet

Install the first wire frame and chassis for the dual-power junction box that goes in the main cabinet.

Figure 3–7 Installing the Wire Frame and Chassis for the Junction Box in the Main Cabinet

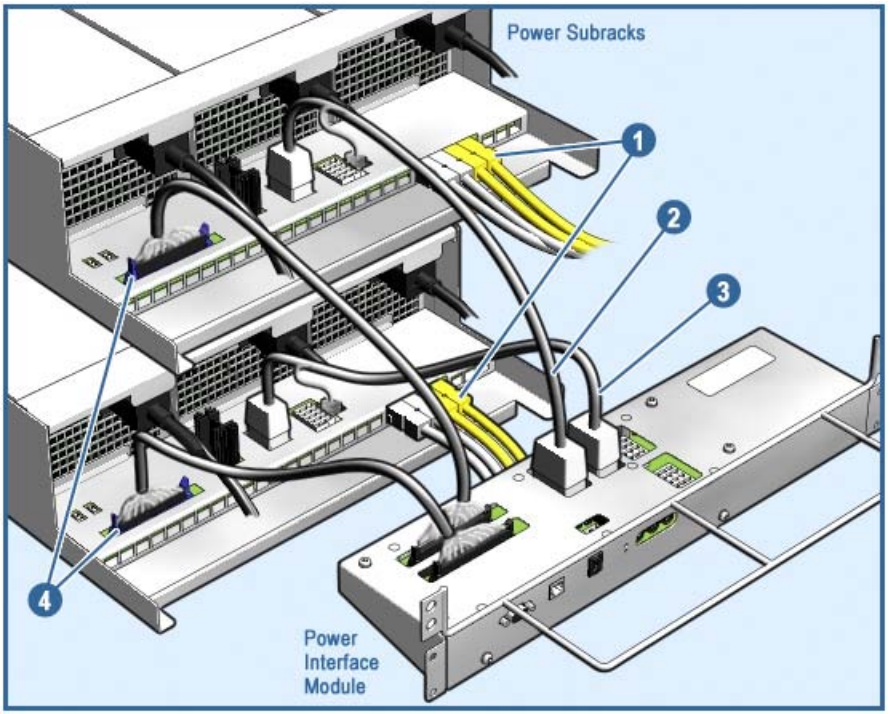


1. Assemble the parts from the box containing the junction box chassis at the rear of the machine. If the junction box comes attached to the chassis, it is simpler to take it apart and install the chassis before replacing the PI and recabling. Place the junction box and cables to one side.
2. Place the eight hex nuts in position to receive the screws to hold the junction box chassis, as shown in Figure 3–7.
3. Screw the chassis in place as shown in Figure 3–7.
4. Take the wire frame from the kit and install it as shown in Figure 3–7.

3.8 Cable and Reattach the Upper Power Interface Assembly (PI)

Attach cables from the power subracks to the upper PI, and reinstall.

Figure 3–8 Cabling the Power Shelves to the PI



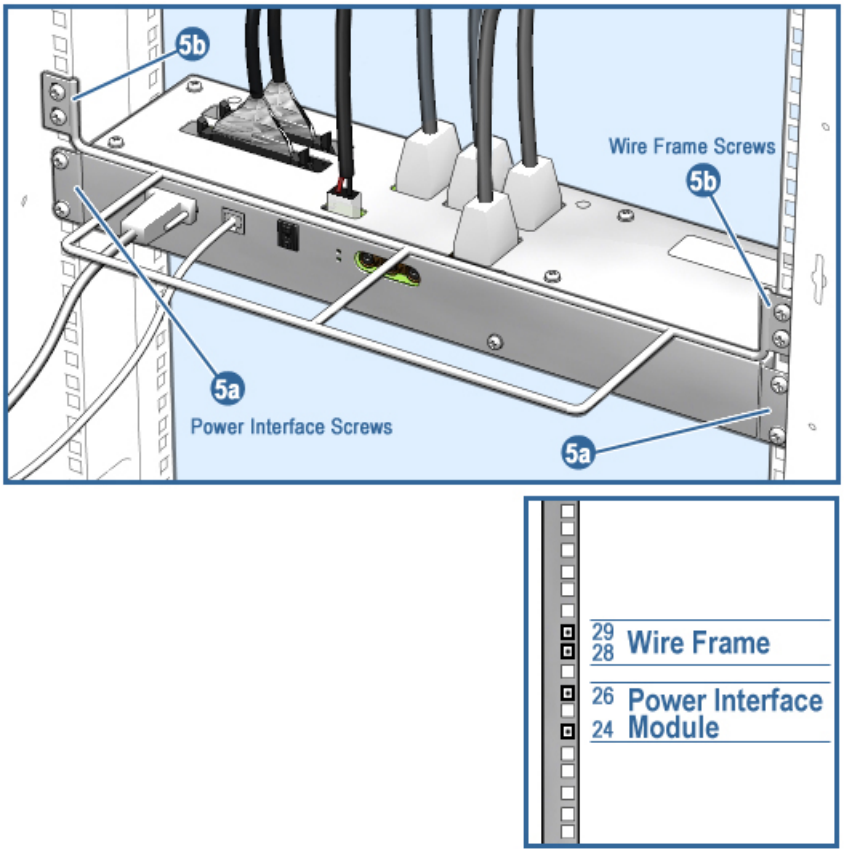
1. Unplug the 48V power cords (that go to the 8P drawers) from the top and bottom power shelves and place them to the side of the machine.
2. Sitting at the rear of the main cabinet, take the upper PI from where it was left dangling by the rear cabinet door, and put it in your lap. (It is easier to do the cabling before the PI is actually reinstalled in the machine.) Remove the existing 15-position harness from the PI, and replace it with the new harness (part no. 17-05179-01), as shown in Figure 3–8. Notice the position of the two connectors at the Y end of the cable harness, and where they fit in the back of the lower power tray.
3. Install the second new harness (part no. 17-05179-01) in the second 15-position outlet on the PI and the other H7513 power tray, as shown in Figure 3–8. Again, notice the

position of the two connectors at the Y end of the cable harness, and where they fit in the back of the upper power tray.

4. Reconnect the signal interface cables between the PI and the H7513 power trays. See Figure 3–8.

5. Move the PI assembly to the rail holes shown in Figure 3–9, and replace the four Phillips head screws to hold the PI assembly in position (5a). Also, replace the wire frame above the PI assembly in the rail holes shown (5b).

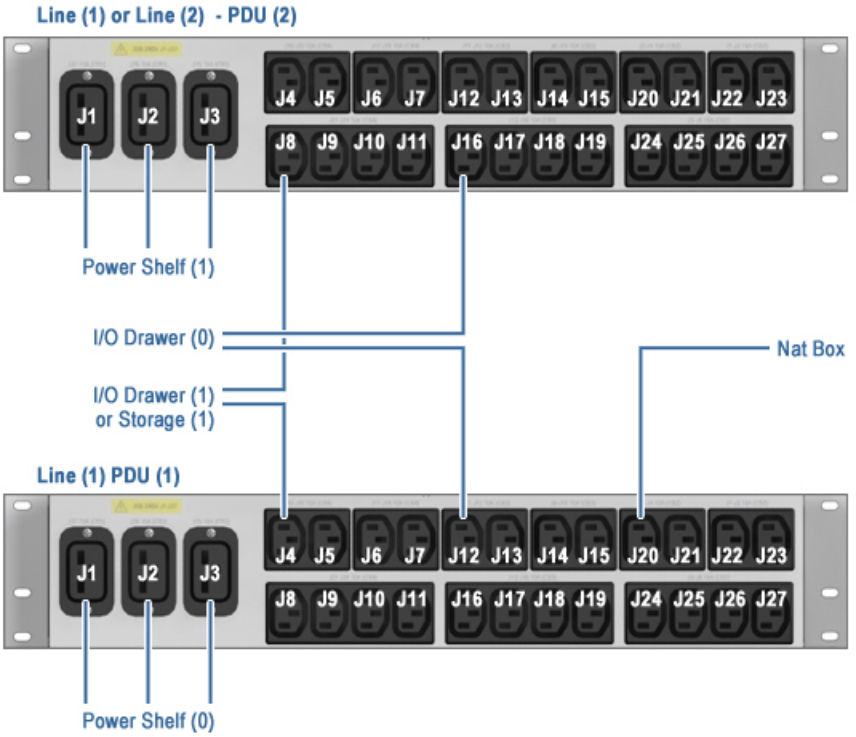
Figure 3–9 Reattach the PI and Wire Frame to the Rail Holes



3.9 Recable Power Cables from I/O to the Two PDUs

To supply 48V power redundancy to the I/O in the main cabinet, switch the circuits to both PDUs in the main cabinet.

Figure 3–10 Switching I/O Circuits to the new PDU

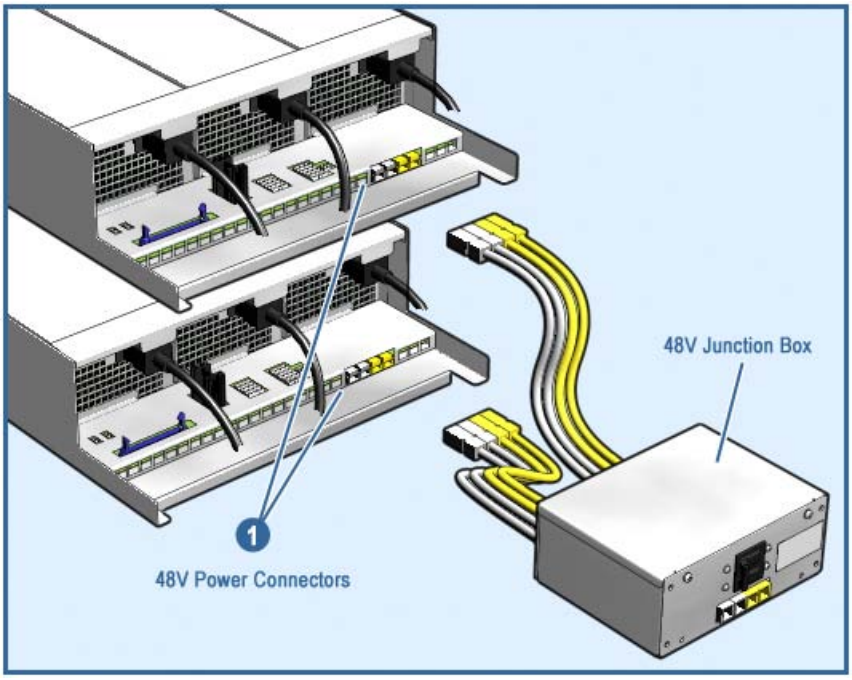


1. Recable any I/O drawers or connections from the main cabinet that were attached to the PDUs so that they can receive power from both the upper and lower PDU. An example of recabling for a typical configuration of I/O in a main cabinet is shown in Figure 3–10.

3.10 Cable the 48V Junction Box to the Power Subracks in the Main Cabinet

At the rear of the main cabinet, attach the cables from the 48V junction box to the back of the power subracks.

Figure 3–11 Cabling the Junction Box to the Power Subracks

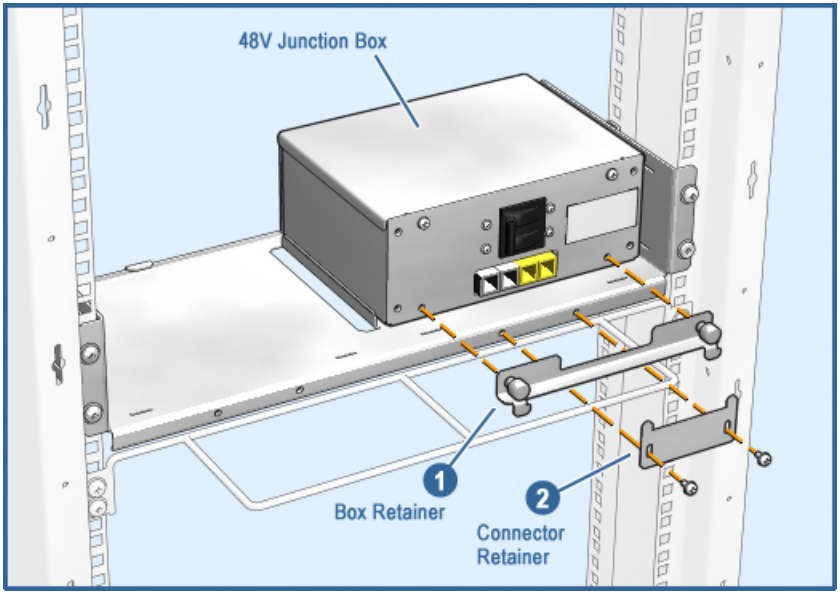


1. Holding one of the junction boxes in your lap, slide the junction box cables between the junction box chassis and the PI and cable it to the power subracks as shown in Figure 3–11.

3.11 Install the Junction Box in the Chassis

Place the junction box on the chassis and screw the box retainer into the junction box. Then install the connector retainer bracket at the front of the chassis.

Figure 3–12 Installing the Junction Box in the Main Cabinet

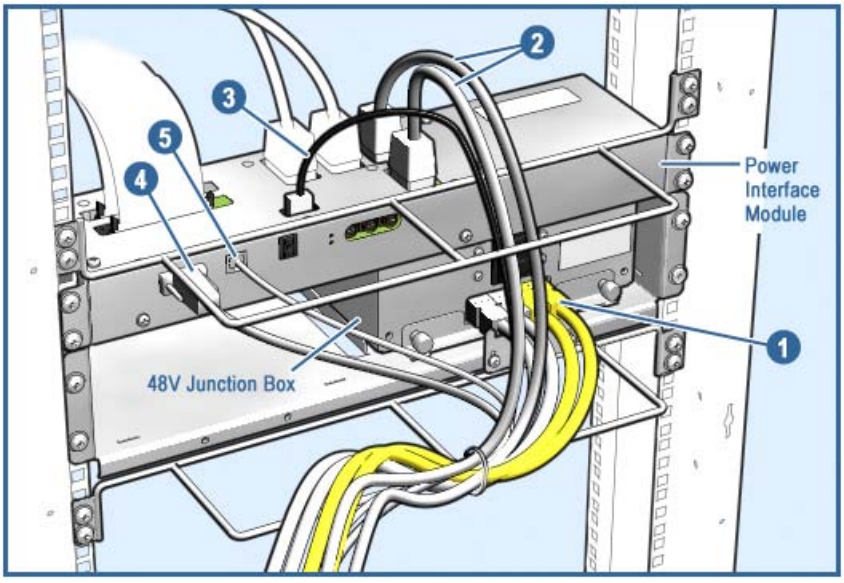


1. Connect the box retainer to the 48V junction box with the small screws, as shown in Figure 3–12.
2. Install the connector retainer bracket to the front rail of the chassis using the small screws.

3.12 Cable the Lower 8P Drawer to the PI and Junction Box in the Main Cabinet

At the rear of the main cabinet, attach the 48V power cord from the lower 8P drawer to the front of the junction box, and the Vaux and fan power cables from the lower 8P drawer to the PI.

Figure 3–13 Cabling the Lower 8P Drawer to the PI and Junction Box

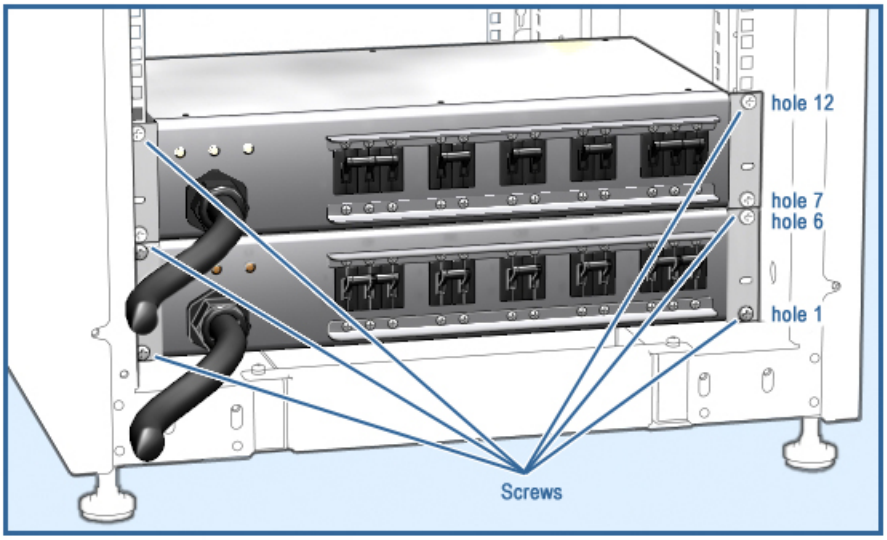


1. Route the 48V power cord that goes to the lower 8P drawer (previously set to one side) to the front of the junction box. See Figure 3–13.
2. Connect the fan cables from the 8P box to the PI.
3. Connect the Vaux cable from the 8P box to the PI.
4. Connect the MBM interface cable to the PI.
5. Connect the cabinet OCP cable to the PI.

3.13 Install the New PDUs (Ordered Separately) in the Expansion Cabinet

At the rear of the expansion cabinet, slide in the third and fourth Power Distribution Unit (PDUs), ordered separately.

Figure 3–14 Installing the New PDUs in the Expansion Cabinet

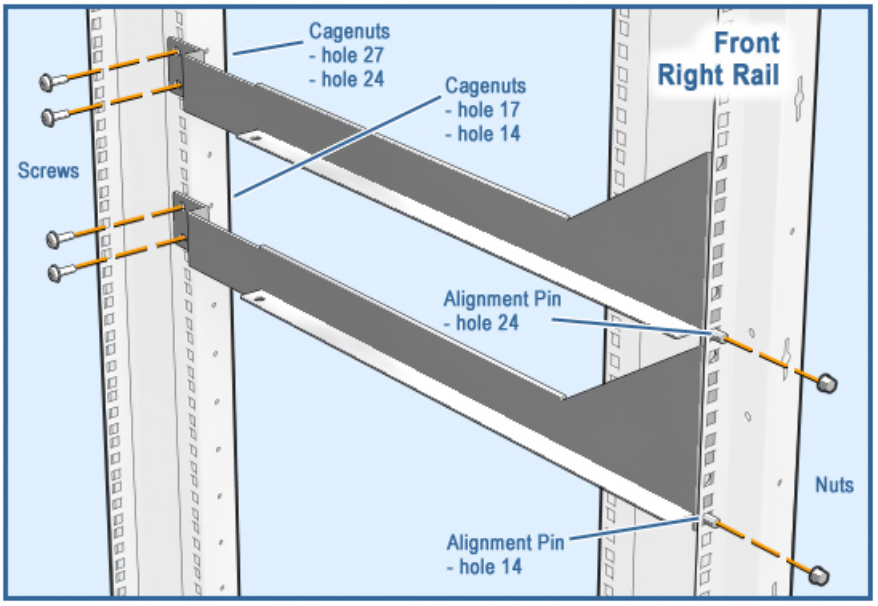


1. At the rear of the expansion cabinet, attach the PDUs rear mounting brackets according to the instructions provided with the PDU.
2. Slide the first PDU in and screw it in place (holes 1 and 6 on the vertical rails at the back of the expansion cabinet). See Figure 3–14.
3. Slide the second PDU in above the first and screw it in place (holes 7 and 12 on the vertical rails at the back of the expansion cabinet). See Figure 3–14.

3.14 Install Side Rails for New 48V Subracks in the Expansion Cabinet

Install the side rails to hold the new 48V subracks in the expansion cabinet.

Figure 3–15 Installing Side Rails for New 48V Subracks in the Expansion Cabinet

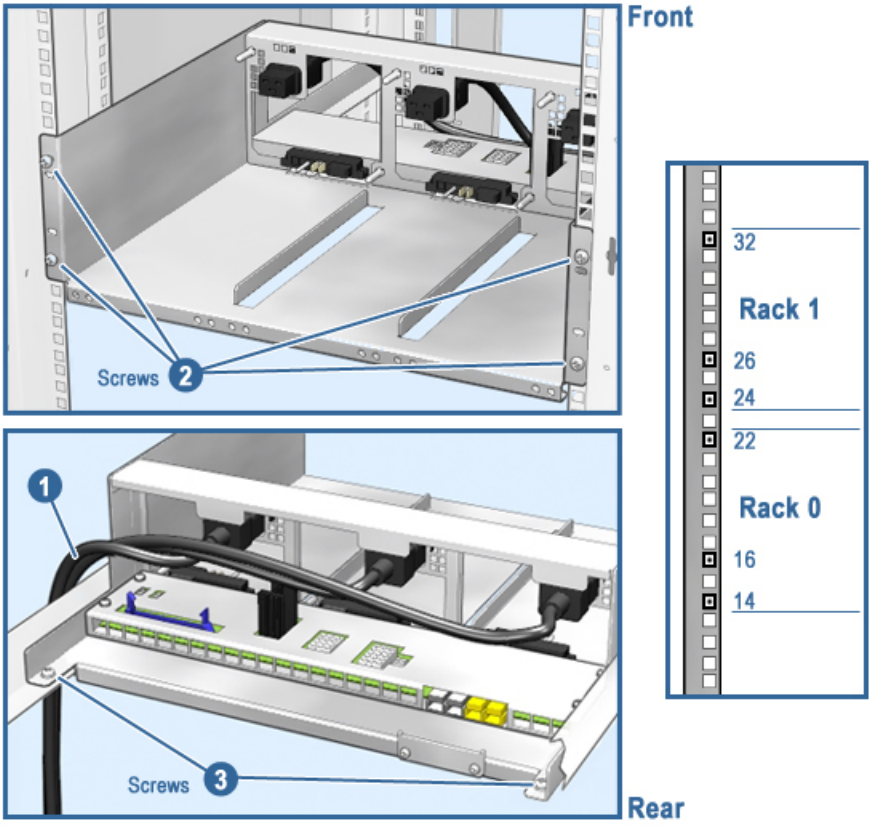


1. Unpack the Phillips head screws and nuts supplied with the subrack assemblies.
2. Select the four side rails from the kit. They will support the new subracks when they are installed in the expansion cabinet.
3. At the front of the expansion cabinet, place the bottom side rail in position by inserting the alignment pin (threaded M6 stud) in hole 14. Attach the M6 nut to the alignment pin using a metric wrench. (A crescent wrench will also work.) (See Figure 3–15.)
4. At the rear of the expansion cabinet, attach the bottom side rail to the rear rail at holes 14 and 17 using the M6 Philips screws and locking nuts. (See Figure 3–15).
5. Similarly to steps 3 and 4, install the top side rail, placing the alignment pin in hole 24, attaching the M6 nut to the alignment pin. Attach the back of the upper side rail at holes 24 and 27 with M6 Philips screws and locking nuts. (See Figure 3–15.)

3.15 Install the New 48V Subracks in the Expansion Cabinet

Install the new 48V subracks in the expansion cabinet.

Figure 3–16 Installing the New 48V Subracks in the Expansion Cabinet

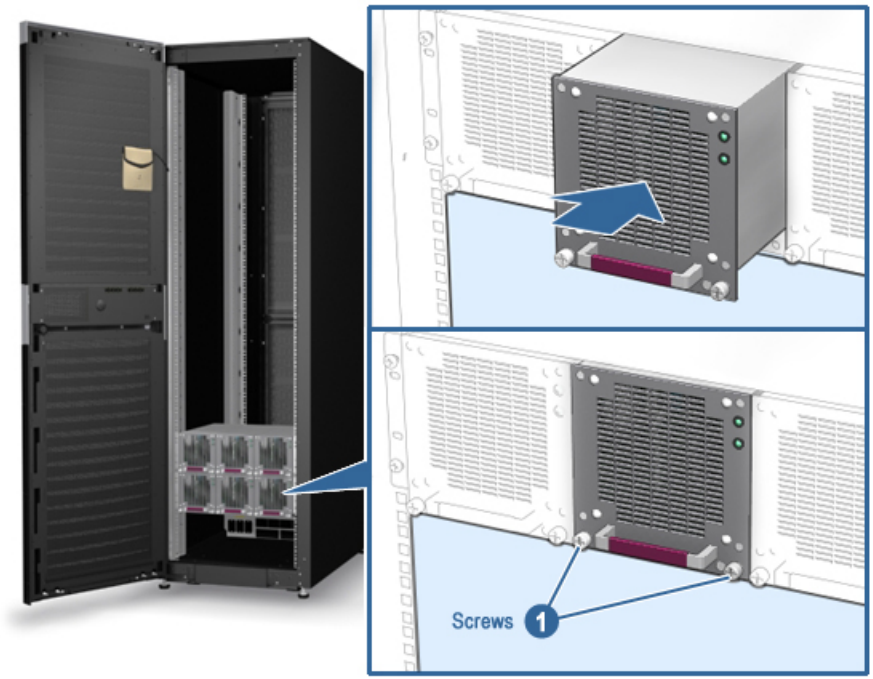


1. At the front of the expansion cabinet, slide in the subracks, guided by the newly installed side rails. Place the cables at the back of the subracks over the side rail, as shown in Figure 3–16.
2. At the front of the expansion cabinet, using the four M5 Phillips screws, screw the front of each subrack to the vertical rails as shown in Figure 3–16.
3. At the rear of the expansion cabinet, use two of the M5 Phillips screws to screw the back of each subrack to the newly installed side rails (see Figure 3–16).

3.16 Install the New Power Supplies in the Expansion Cabinet

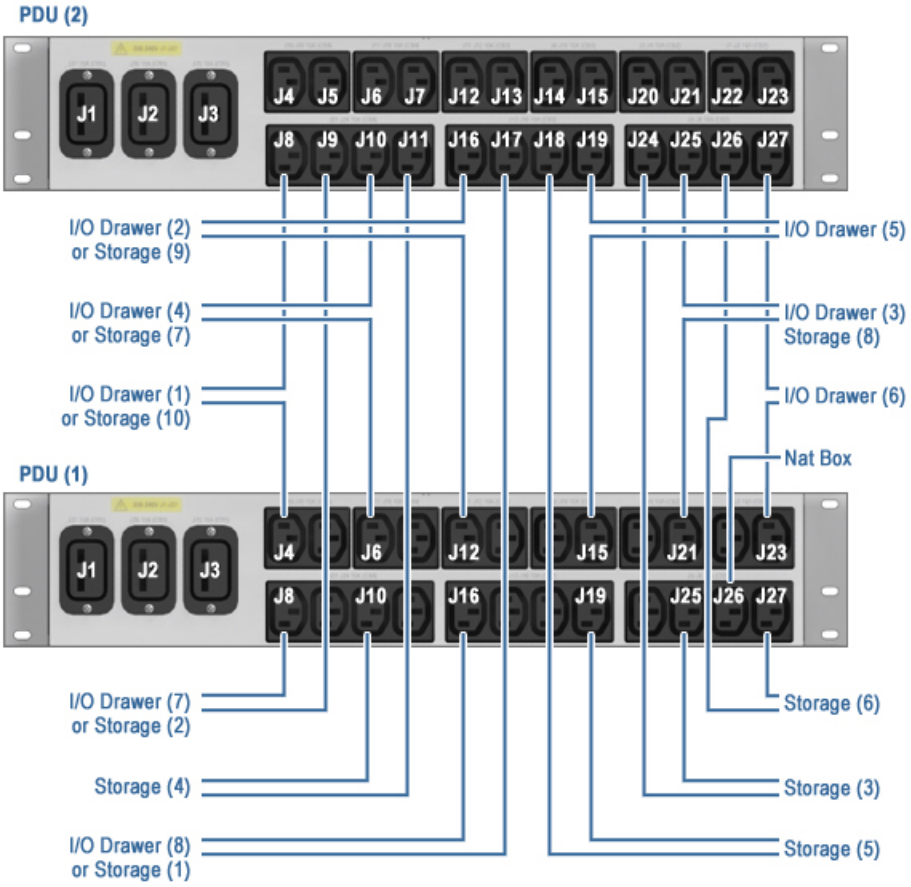
Install the new power supplies in the subracks in the expansion cabinet.

Figure 3–17 Installing the New Power Supplies in the Expansion Cabinet



1. Slide the six new power supplies in place and fasten them with their captive screws to the newly installed subracks.
2. Cable the upper and lower power subracks to the upper and lower PDUs at connectors J1, J2, and J3. Cable I/O to receive power from both PDUs. An example of recabling for a typical configuration of I/O in an expander cabinet is shown in Figure 3–18.

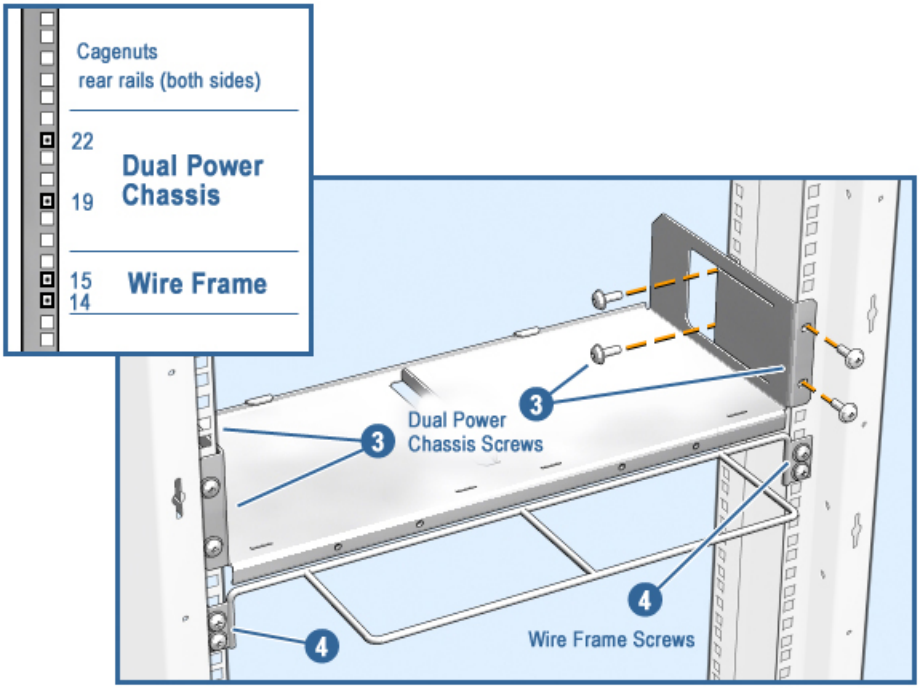
Figure 3–18 Switching I/O Circuits to New PDUs in Expander Cabinet



3.17 Install Second Dual Power Chassis in the Expansion Cabinet

Install the wire frame and chassis for the second dual-power junction box, which goes in the expansion cabinet.

Figure 3–19 Install the Wire Frame and Chassis for the Junction Box

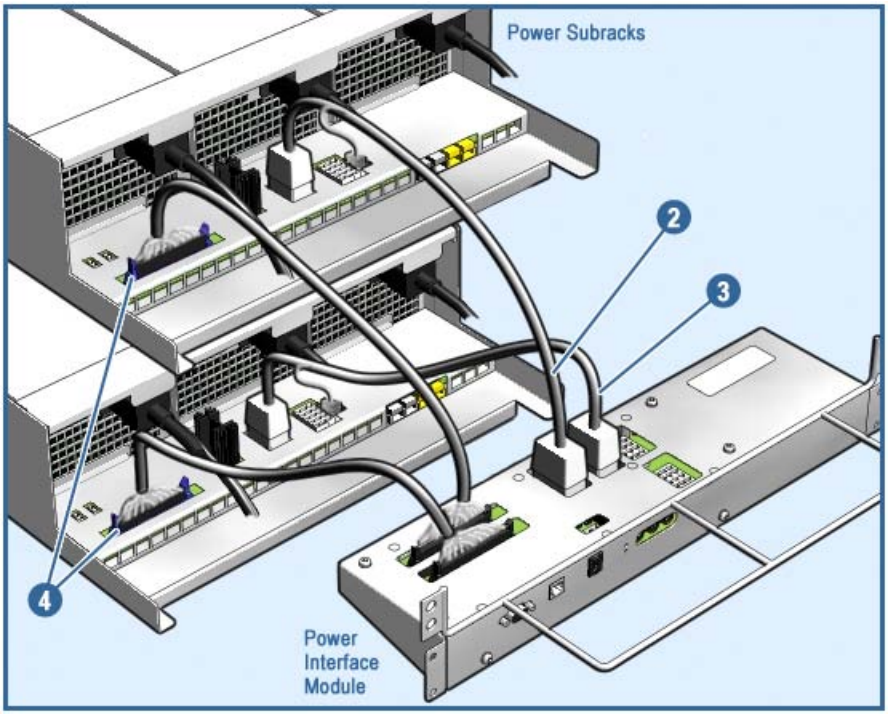


1. At the rear of the expansion cabinet, assemble the parts from the box containing the second junction box chassis. If the junction box comes attached to the chassis, it is simpler to take it apart and install the chassis before replacing the PIs and recabling. Place the junction box and cables to one side.
2. Place the eight hex nuts in position to receive the screws to hold the junction box chassis, as shown in the detail in.
3. Screw the chassis in place as shown in Figure 3–19.
4. Take the wire frame from the kit and install it as shown in Figure 3–19.

3.18 Cable and Attach the Other Power Interface Assembly (PI) in the Expansion Cabinet

Attach cables from the new power subracks in the expansion cabinet to the PI removed from the main cabinet, and install the PI.

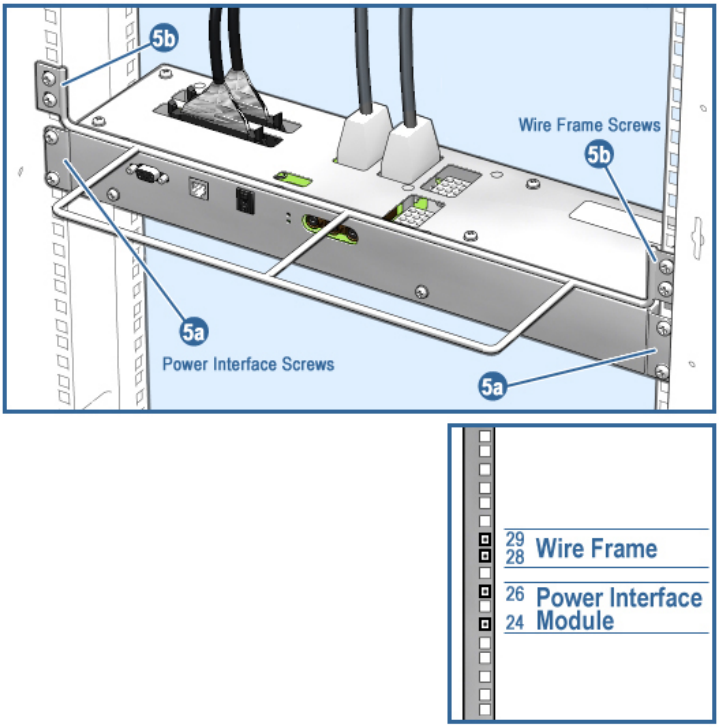
Figure 3–20 Cabling the New Power Shelves to the PI in the Expansion Cabinet



1. Take the 48V power cord (that goes to the upper 8P drawer in the main cabinet) and place it to the side of the expansion cabinet where it will be accessible later.
2. Sitting at the rear of the expansion cabinet, take the lower PI from where it was put aside, and place it in your lap. (It is easier to do the cabling before the PI is actually reinstalled in the machine.) Install one of the new harnesses (part no. 17-05179-01), as shown in Figure 3–8. Notice the position of the two connectors at the Y end of the cable harness, and where they fit in the back of the power tray.

3. Install the second new harness (part no. 17-05179-01) in the second 15-position outlet on the PI and the other H7513 power tray, as shown in Figure 3–20. Again, notice the position of the two connectors at the Y end of the cable harness, and where they fit in the back of the upper power tray.
4. Reconnect the signal interface cables between the PI and the H7513 power trays. See Figure 3–20.
5. Move the PI assembly to the rail holes in the expansion cabinet shown in Figure 3–21, and replace the four Phillips head screws to hold the PI assembly in position (5a). Also, replace the wire frame above the PI assembly in the rail holes shown (5b).

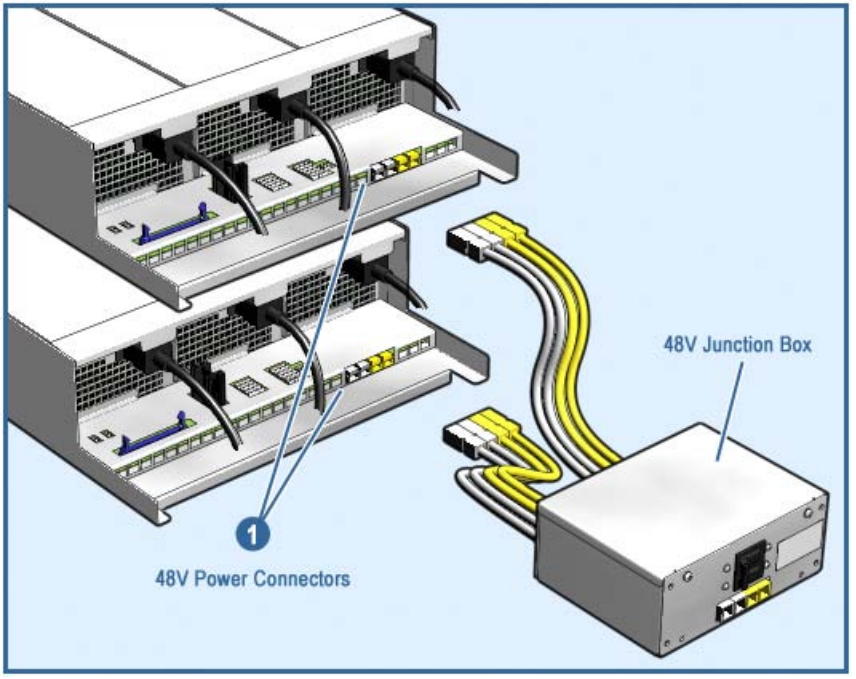
Figure 3–21 Attach the PI and Wire Frame to the Expansion Cabinet Rail Holes



3.19 Cable the Second 48V Junction Box to the Power Subracks in the Expansion Cabinet

At the rear of the expansion cabinet, attach the cables from the second 48V junction box to the back of the power subracks.

Figure 3–22 Cabling the Junction Box to the Power Subracks in the Expansion Cabinet

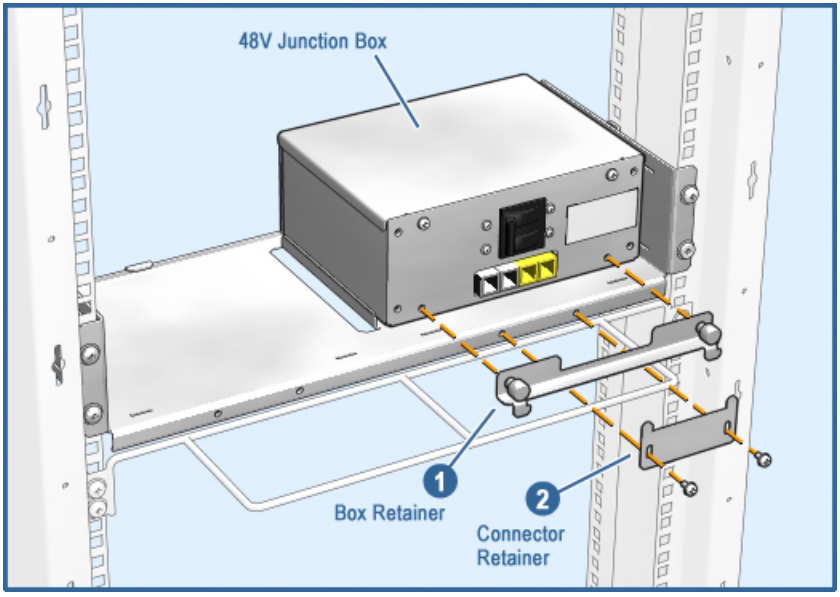


1. Holding the junction box in your lap at the rear of the expander cabinet, slide the junction box cables between the junction box chassis and the PI and cable it to the power subracks as shown in Figure 3–22.

3.20 Install the Second Junction Box in the Chassis in the Expansion Cabinet

At the rear of the expansion cabinet, place the junction box on the chassis and screw the box retainer into the junction box. Then install the connector retainer bracket at the front of the chassis.

Figure 3–23 Installing the Second Junction Box in the Expansion Cabinet

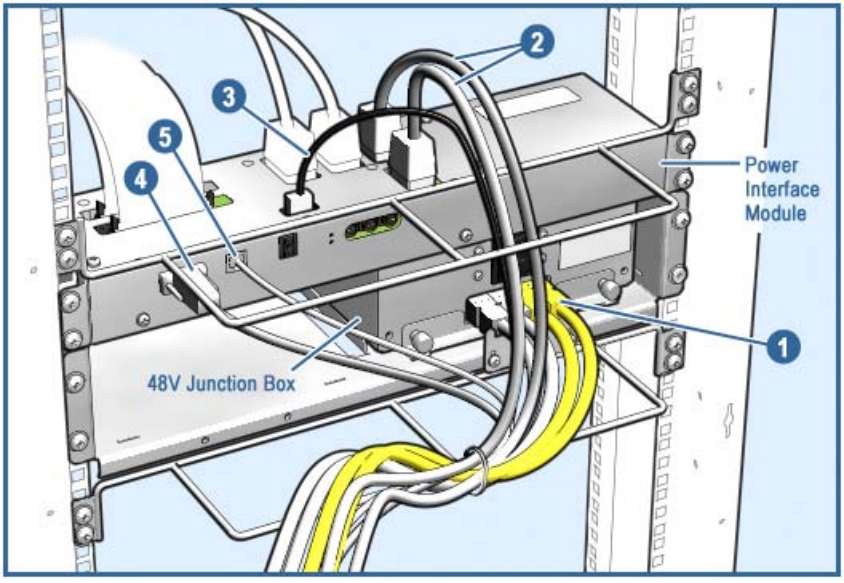


1. Connect the box retainer to the 48V junction box with the small screws, as shown in Figure 3–23.
2. Install the connector retainer bracket to the front rail of the chassis using the small screws.

3.21 Cable the Upper 8P Drawer to the PI and Junction Box in the Expansion Cabinet

Attach the 48V power cord from the topmost 8P drawer in the main cabinet to the front of the junction box in the expansion cabinet, and the Vaux and fan power cables from the upper 8P drawer to the PI.

Figure 3–24 Cabling the Upper 8P Drawer to the PI and Junction Box in the Expansion Cabinet



1. Route the 48V power cord that goes to the upper 8P drawer (previously set to one side) to the front of the junction box. See Figure 3–24.
2. Connect the fan cables from the 8P box to the PI.
3. Connect the Vaux cable from the 8P box to the PI.
4. Connect the MBM interface cable to the PI.
5. Connect the cabinet OCP cable to the PI.

3.22 Restore Power and Check LEDs

Plug the four PDUs into their chosen outlets. Turn on the breaker switches on the four PDUs. Turn on the 3-position main cabinet OCP switch to "On: (1). All LEDs should light green.

Figure 3–25 Restore Power at Cabinet OCP

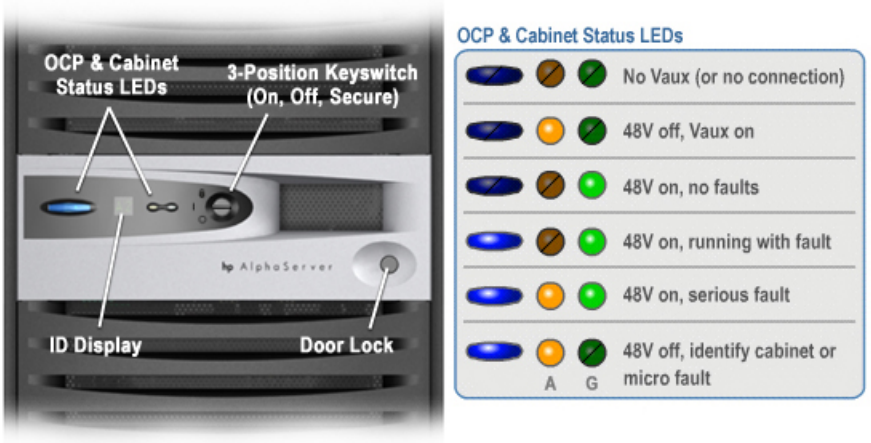


Table 3–2 OCP LED Table[1]

Blue LED	Amber LED	Green LED	Indication
Off	Off	Off	No Vaux (or no connection)
Off	On	Off	Vaux on, bulk power off
Off	Off	On	Bulk power on, no errors
On	Off	On	Bulk power on, running with fault
On	On	On	Bulk power on, serious fault
On	On	Off	Bulk power on, identify cabinet or micro fault

[1] The left LED is blue, the middle LED is amber, and the right LED is green.

1. Plug in the power cords from the two PDUs to the power outlets chosen for them.
2. Turn on the breaker switches on the two PDUs.
3. Turn the three-position keyswitch on the front cabinet door to “On” (1). See Figure 3–25.
4. All of the LEDs should light green. If they do not, return to Section 3.1 and remove power from the system. Check to make sure that all cable connections are secure.
5. Once LEDs are on, proceed to Chapter 6 for verification procedures.

Chapter 4
Install the Dual AC Power Upgrade for the Model 32

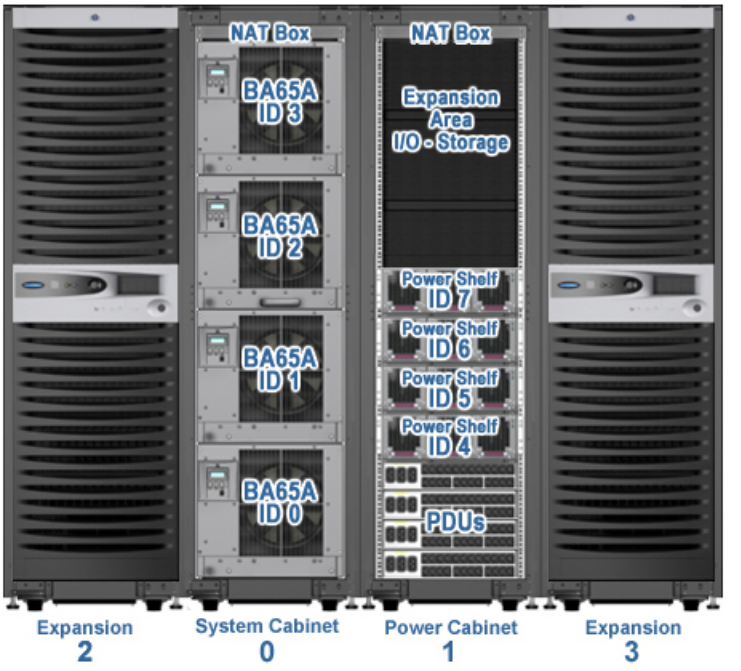
This chapter tells how to install the Dual AC power upgrade for a GS1280 Model 32 system.

- "Before" and "After" pictures of Dual AC power upgrade for Model 32 systems
- Preparation: 60-Amp AC Power Input
- Unpack and deskid the Dual AC power cabinet
- Check Dual AC power cabinet components
- Perform an orderly shutdown of the system, and remove system power
- Remove the old power cabinet from the system lineup, and place it near the Dual AC power cabinet
- Move two PDUs from the old power cabinet to the Dual AC power cabinet
- Overview of Moving I/O Drawers
- Remove storage and/or PCI shelves from the old power cabinet
- Install storage and/or PCI shelves to the Dual AC-power cabinet.
- Install the Dual AC power cabinet in the system lineup
- Recable power cables from all I/O to the PDUs in the Dual AC power cabinet for dual-power supply
- Cable the Dual AC Interface (SDI) modules to the appropriate 8P drawers in the main cabinet
- Connect the NAT boxes
- Restore power and check LEDs
- Reconfigure and Verify the System

4.1 “Before” and “After” Pictures of Dual AC Power Upgrade for Model 32 System

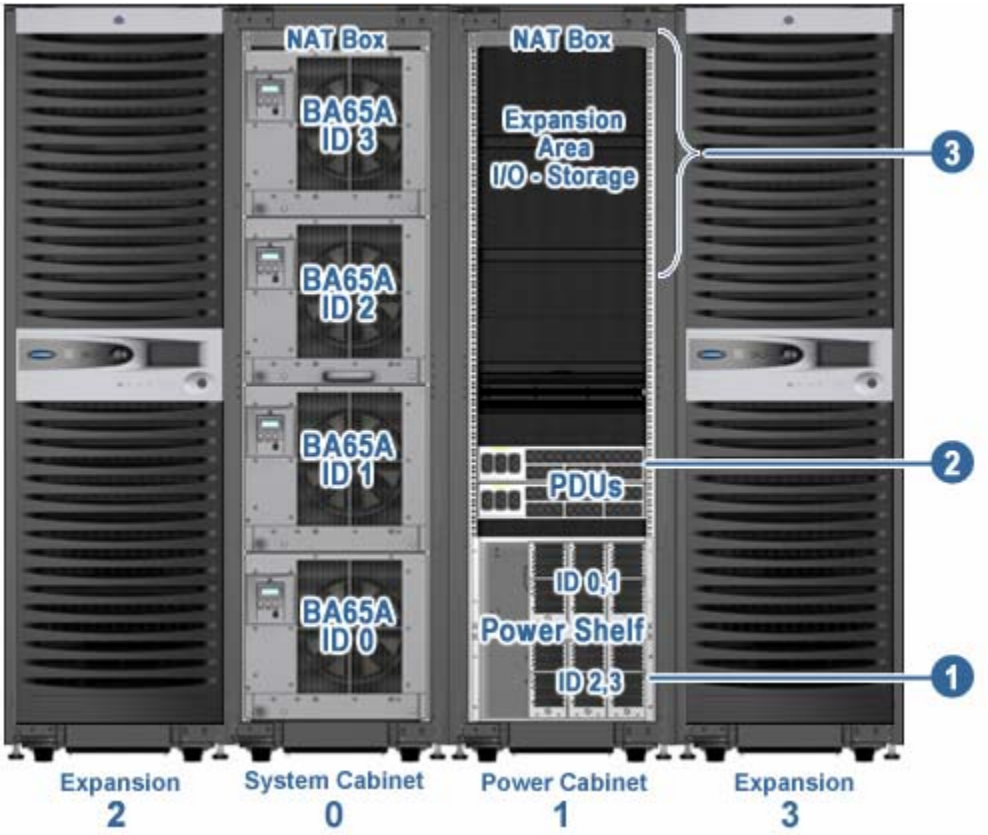
These pictures show the “before” and “after” setup for a Dual AC power upgrade on a GS1280 Model 32 system.

Figure 4–1 Typical 32P System Before Dual AC Power Installation



WARNING: Do NOT install using just these diagrams. Power must be removed, cables detached and reattached, and so forth.

Figure 4–2 Typical 32P System After Dual AC Power Upgrade



1. New Dual AC power cabinet replaces old power cabinet. New cabinet contains new Power Shelf for dual feed AC power supplies for the four 8P drawers in the system cabinet.
2. Two 30-amp Power Distribution Units (PDUs) from old power cabinet moved to supply dual feed AC power to all I/O in the system.
3. I/O shelves from old power cabinet moved to Dual AC power cabinet.

4.2 Preparation: 60-Amp AC Power Input

The Dual AC power cabinet uses 60-Amp AC input. Before you install the Dual AC power cabinet, you *must* make sure this input and proper plugs and cords are available.

Table 4-1 30-Amp AC Power Input (Old AC Power Requirements)

Power	US/Canada	Japan	Europe
Voltage	120/208	200	380/415
Current	24A	24A	24A
Phase	3W + N + G	3W + N + G	3W + N + G
Frequency	50-60 Hz	50-60 Hz	50-60 Hz
Kva, Model 32, 1 I/O Drawer, 1 StorageWorks Shelf	10.990	10.990	10.990
Current per phase	11.7A	11.7A	7.3A
Power outlets (internal)	3x C19, 24 x C13	3 x C19, 24 x C13	3 x C19, 24 x C13
Number of PDUs required	4, 8 for dual-AC	4, 8 for dual-AC	4, 8 for dual-AC
Line connection	Fixed cord and plug	Fixed cord and plug	Fixed cord and plug
Power cord	5 x 10AWG	5 x 10AWG	5 x $4mm^2$
Power plug	L21-30P, Hubbell 2811	L21-30P, Hubbell 2811	Hubbell 532P6W
Main breaker	30A	30A	30A
Sub-breakers	3x20A(2 pole) 1x20A(3 pole)	3x20A(2 pole) 1x20A(3 pole)	3x15A(2 pole) 1x15A(3 pole)

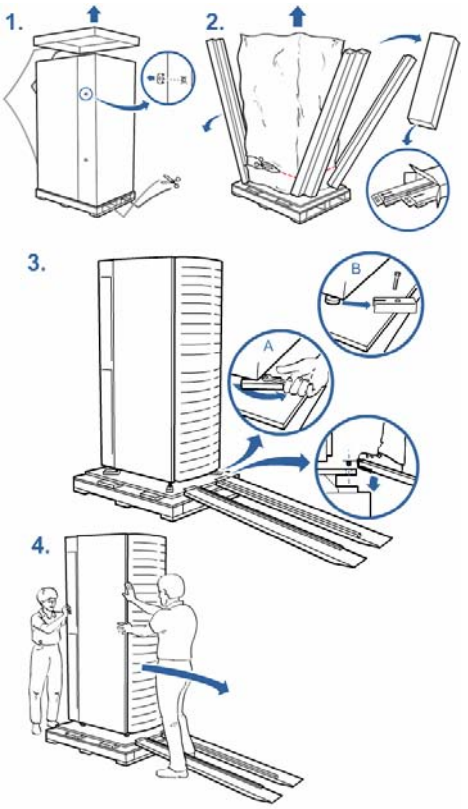
Table 4-2 60-Amp AC Power Input (AC Power Requirements for Dual AC Power Supply Cabinet)

Power	US/Canada	Japan	Europe
Voltage	120/208	200	380/415
Current	48A	48A	25A
Phase	3W + G	3W + G	3W + N + G
Frequency	50-60 Hz	50-60 Hz	50-60 Hz
Kva, Model 32, 1 I/O Drawer, 1 StorageWorks Shelf	10.1	10.1	10.1
Number of PDUs required	2 Main, 2 Aux	2 Main, 2 Aux	2 Main, 2 Aux
Main PDU			
Current, per phase	24A	25A	16A
Line Connection	fixed cord & plug	fixed cord & plug	fixed cord & plug
Power Cord	4 x 8AWG	4 x 8AWG	5 x 4 mm2
Power Plug	IEC 60A, Hubbell 460P9W	IEC 60A, Hubbell 460P9W	IEC 32A, Hubbell 532P6W
Auxiliary PDU			
Current, per phase	2.5A	2.5A	1.3A
Line Connection	fixed cord & plug	fixed cord & plug	fixed cord & plug
Power Cord	5 x 10AWG	5 x 10AWG	5 x 4 mm2
Power Plug	L21-30P, Hubbell 2811	L21-30P, Hubbell 2811	Hubbell 532P6W

4.3 Unpack and Deskid the Dual AC Power Cabinet

To add the new Dual AC power option for the 32P configuration, you need to unpack and deskid the Dual AC power cabinet.

Figure 4–3 Unpacking and Deskidding the Dual AC Power Cabinet



The cabinet is 2 meters tall and will not fit through doors that are 80 inches tall while on their skids. You may have to de-skid them before getting them into the computer room.

Be sure all stabilizer feet are raised before de-skidding.

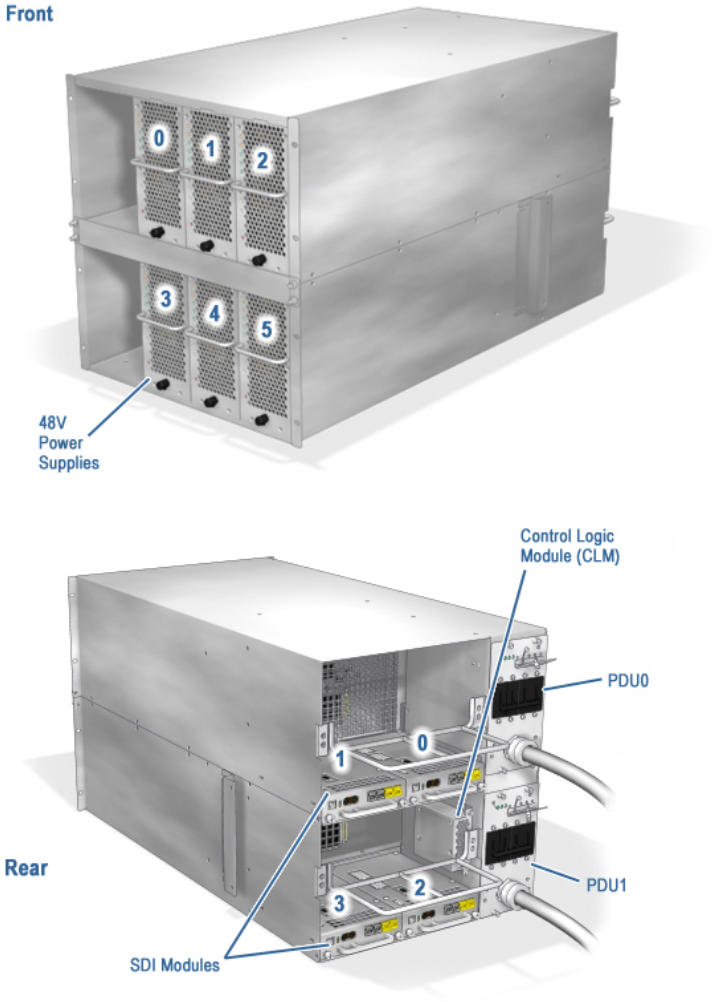
Depending up where you are in the world, you may receive a Dual AC power cabinet completely enveloped in either heavy-duty corrugated cardboard or "shrink wrapped". In either case, pictured instructions showing how to unpack and de-skid the cabinet are supplied with the packaging.

1. For a cabinet shipped in corrugated cardboard, cut the box straps, remove the top, remove the screws that hold the corrugated sides together and remove them. If the system came "shrink wrapped", simply remove the wrap.
2. Remove the containers holding the ramps and attach the ramps to the pallet. Inset C in Figure 4–3 shows how the rails are held onto the pallet at the top. Step on the rail until it is firmly attached to the pallet. **Be sure to place the ramps on the pallet such that each ramp's side rails face inward, so that the cabinet wheels cannot fall off the rail as the cabinet proceeds downward.**
3. Remove the brackets by which the cabinet is attached to the pallet (insets A and B). **Retract all stabilizer feet completely into the cabinet before de-skidding.** This is important. If the feet are not retracted, they may contact the floor at the bottom of the ramp and bend.
4. At least two people are required to remove the cabinet from the skid.

4.4 Check Dual AC Power Cabinet Components

Check your upgrade cabinet to familiarize yourself with its components. At the bottom of the cabinet is the Front End Power System (FEPS) that supplies dual feed AC power for the four 8P drawers in the main cabinet of the system.

Figure 4–4 Front End Power System (FEPS)



The Dual AC Dual-Power Upgrade option for a 32P system (Part number 3X-H7514-BC) consists of a cabinet containing a new Dual AC Front-End Power System (see Figure 4–4) at the bottom of the cabinet and a NAT box at the top of the cabinet.

Front End Power System (FEPS)

The Front End Power System (FEPS) accepts AC power through the two Power Distribution Units (PDUs) shown at the right of the rear of the cabinet. (The two AC input cables are not actually part of the Dual AC power cabinet kit. You must have these two cords and two sources of 60-Amp power already available, as noted in Section 4.2. AC power from each PDU is converted to 48V by the six 48V power supplies at the rear of the cabinet. One power supply provides redundant power in case of failure.

The 48V power is distributed to the four 8Pdrawers through the four Dual AC Interface (SDI) modules at the rear of the cabinet. Each SDI module provides power to an 8P system drawer. An SDI module allows the MBM to turn 48V on and off, service faults, and provide status on the power. Also, the SDI generates auxiliary voltage through a DC-DC converter.

The numbers 0 – 3 in Figure 4–4 show the particular 8P drawers to which the SDI modules provide power.

The Control Logic Modules provide an interface between the SDI modules and the Dual AC Power Supplies via an I^2C Bus.

NAT Box

The NAT box at the top of the cabinet is used for inter-cabinet communication between any PBMs (logic in PCI I/O drawers) and the controlling MBM (logic in an 8P drawer).

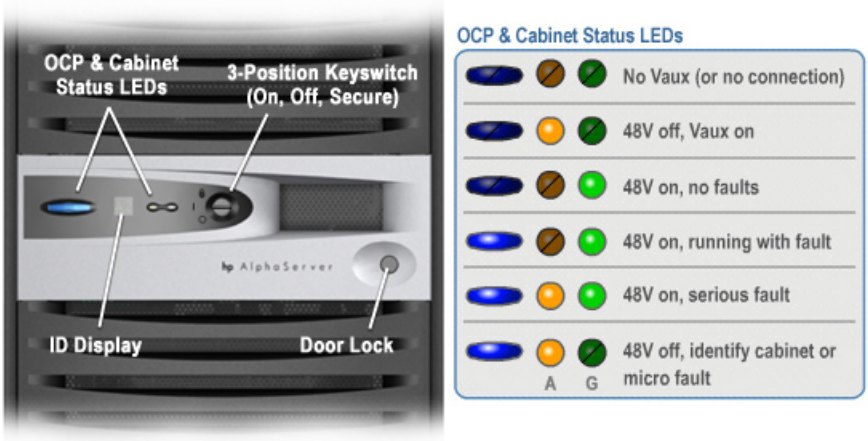
Labels

Manufacturing engineers use labels to identify which 8P drawer should be attached to which SDI modules. A packet of similar labels (Part no. 36-60393-01) should be included in the cabinet for the field engineer to use to label the matching cables from the 8P drawers.

4.5 Shut Down System Power

Back up all important data. Shut down all applications and shut down the operating system in all partitions. Turn off the power at the system cabinet OCP, switch all PDU breakers to off, and unplug the system.

Figure 4–5 Turn Off Power at System Cabinet OCP Switch



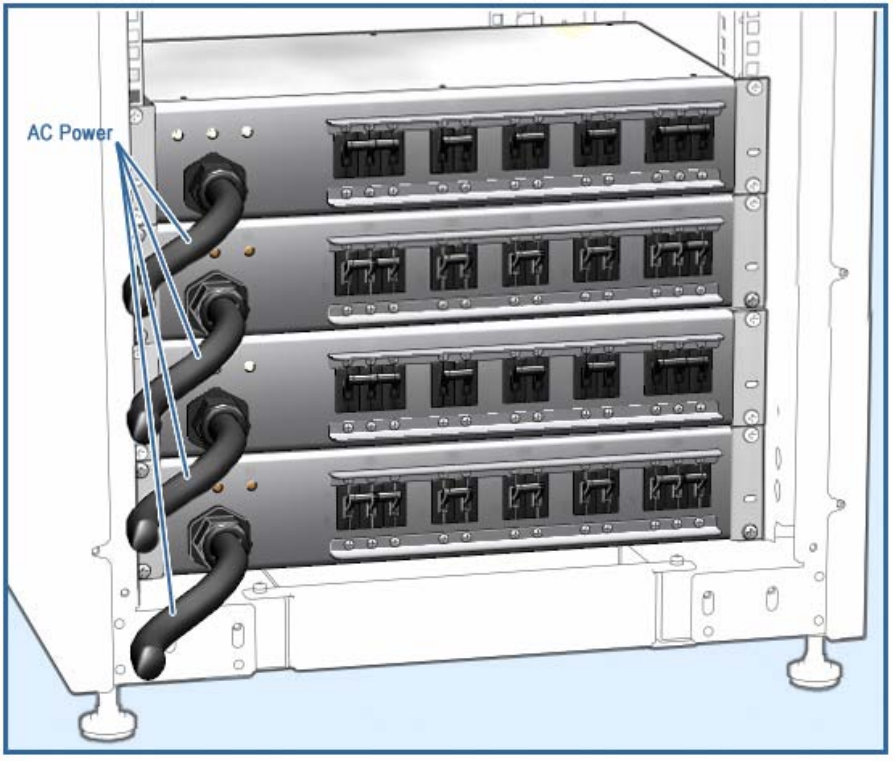
1. Back up all important data on the system.
2. Shut down all applications and shut down the operating system in all partitions.
3. Turn off power to the cabinet at the OCP, turning the 3-position switch to 0 (see Figure 4–5).
4. Wait for the orderly shutdown to complete.
5. At the rear of the old power cabinet, turn the breaker switches on the all the PDUs to the off position.
6. Unplug the old power cabinet and the system cabinet from their power source and wait 5 minutes for any residual power to dissipate.

4.6 Remove Old Power Cabinet

Remove the old power cabinet from the system lineup. This involves unplugging the AC cords to the old power cabinet from the wall outlets and unplugging all the cords between the old power cabinet and other cabinets, so that the old power cabinet can be moved.

4.6.1 Unplug AC Input Cables to Old Power Cabinet

Unplug the AC input cables to all the PDUs in the old power cabinet from the wall or ceiling outlet.

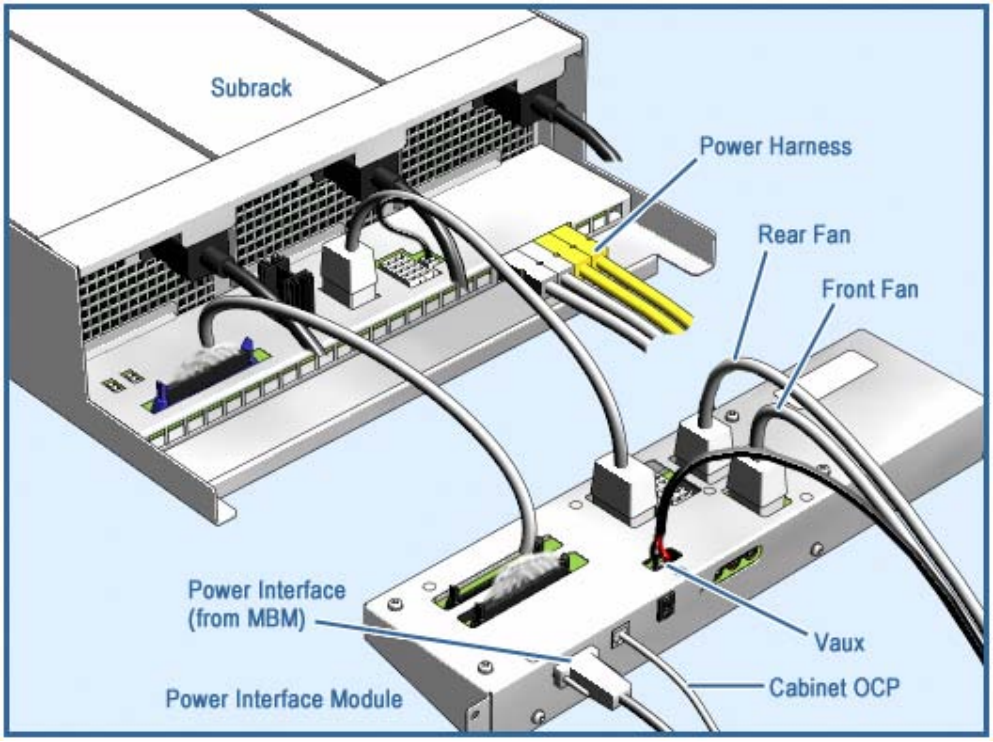


1. At the rear of the old power cabinet, unplug all the AC input cables that go to the four PDUs from their wall outlets. (These cables cannot be unplugged from the PDUs themselves, and will follow the cabinet when it is removed from the system lineup.)

4.6.2 Remove 8P Drawer Cabling from the Power Interface Assemblies (PIs)

At the rear of the old power cabinet, remove the cabling that runs from the old power cabinet to each of the 8P drawers.

Figure 4–6 Remove Cabling from the Old Power Cabinet to 8P Drawers

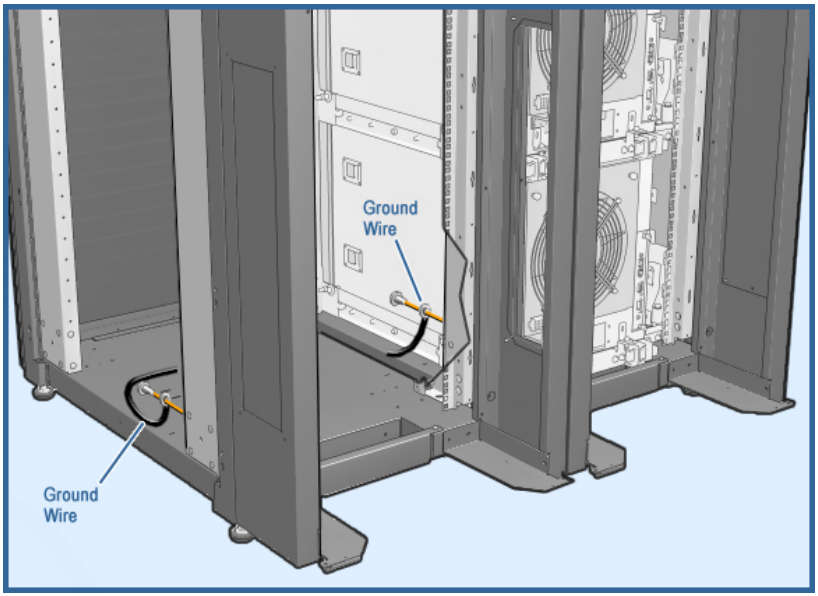


1. At the rear of the old power cabinet, disconnect the MBM interface cable, the cabinet OCP cable, the Vaux cable, and the fan cables from each of the four Power Interface Assemblies (PIs) and power subracks in the old power cabinet. Let them rest beside the main cabinet, still connected to the four 8P drawers in the main cabinet.

4.6.3 Detach the Ground Cable from the Old Power Cabinet

Detach the ground cable from the old power cabinet.

Figure 4–7 Detaching the Ground Cable from the Old Power Cabinet

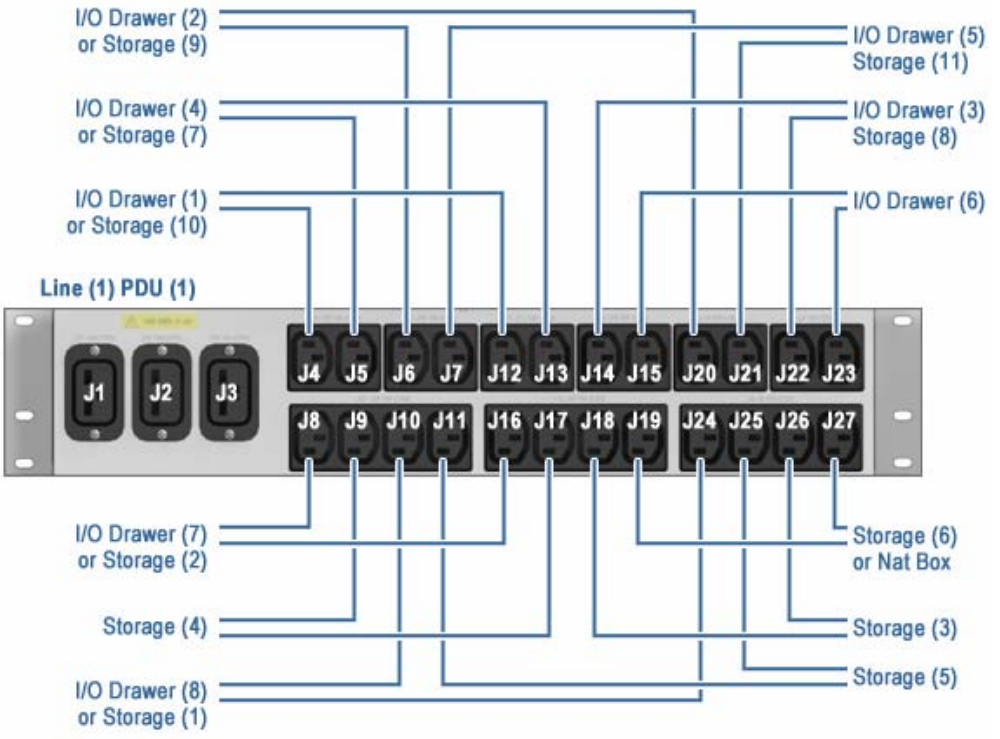


1. Detach the ground cables running from other cabinets into the old power cabinet.

4.6.4 Remove All Power Cables from PDUs in the Old Power Cabinet

Detach all power cables (to PCI and storage shelves) from all the PDUs in the old power cabinet. This includes I/O shelves within the old power cabinet, as well as I/O shelves in expansion cabinets. Leave the cables attached to the I/O shelves.

Figure 4–8 Detaching I/O cables from PDUs in the Old Power Cabinet



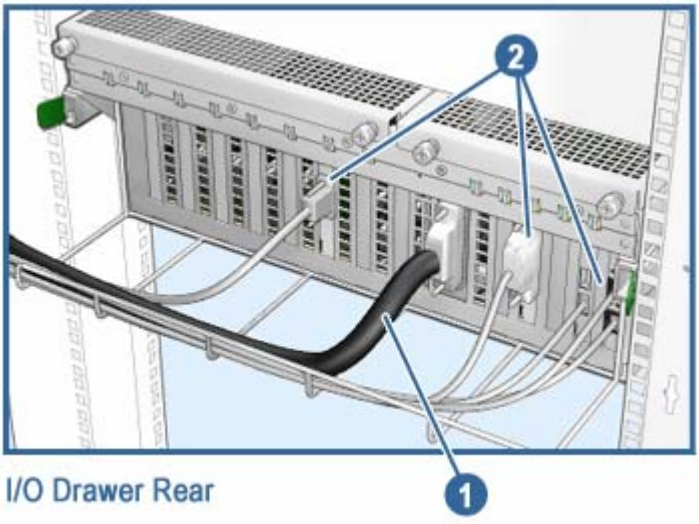
1. At the rear of the old power cabinet, disconnect from the PDUs the power cables running to I/O shelves in other cabinets in the system lineup. Place the cables, still connected to their I/O shelves, so that you will be able to move the old power cabinet out of the lineup. Suggestion: label each power cable as to destination cab and shelf.

   Figure 4–8 shows a typical single-source power setup from a PDU to I/O shelves.

4.6.5 Detach Cables to I/O Drawers and Modules in Old Power Cabinet

At the rear of the old power cabinet, detach or disconnect all cables and interconnects to PCI shelves, I/O shelves, storage/disk units, and so forth, in preparation for removing the old cabinet. Carefully place cables and interconnects aside while leaving the opposite end connected.

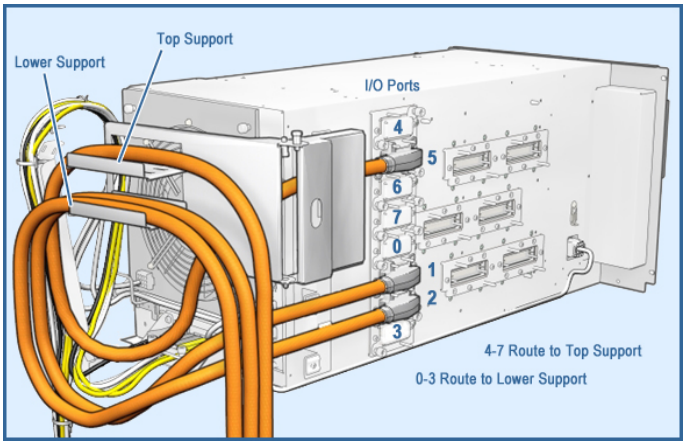
Figure 4–9 Removing Cables from I/O Drawer and Modules in Old Power Cabinet



For each PCI drawer in the old storage cabinet:

1. Remove the large cable (IO7 hose cable) that connects the PCI drawer to the 8P drawer. It is crucial that this cable be reattached to the same PCI box when it is reinstalled. (See Figure 4–10 for an example of an 8P drawer with three cables to three PCI drawers. You would want to label or mark each cable – at the PCI drawer end – with the PCI drawer number to which each is attached, so that you will be able to connect them properly when they are reinstalled.)
2. Remove all of the cables from the PCI drawer that run to various I/O shelves and devices, even those that run to storage drawers in the old power cabinet.

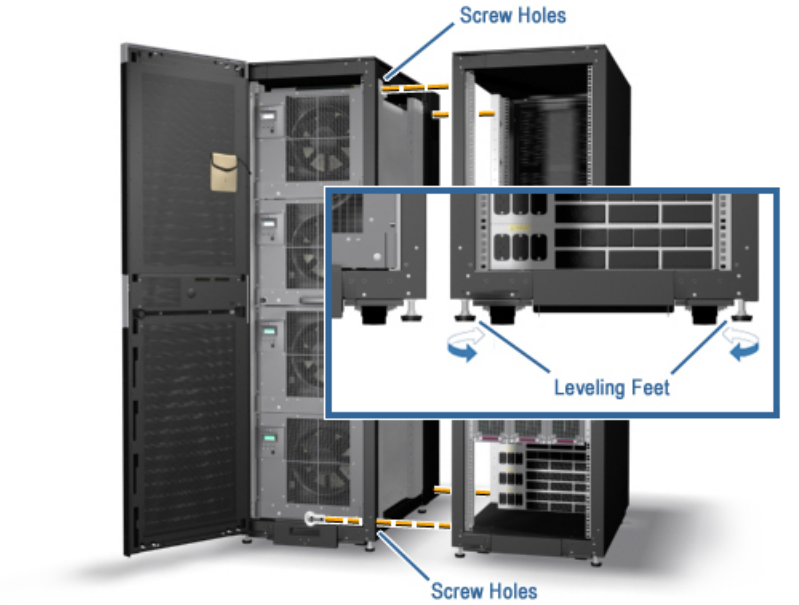
Figure 4–10 I/O Cabling to CPU Drawer



4.6.6 Remove the Old Power Cabinet

Unscrew the old power cabinet from its surrounding cabinets, raise the leveling feet so that the cabinet can be rolled, and roll the cabinet out of the system lineup and place it near the new Dual AC Power Cabinet.

Figure 4–11 Removing the Old Power Cabinet

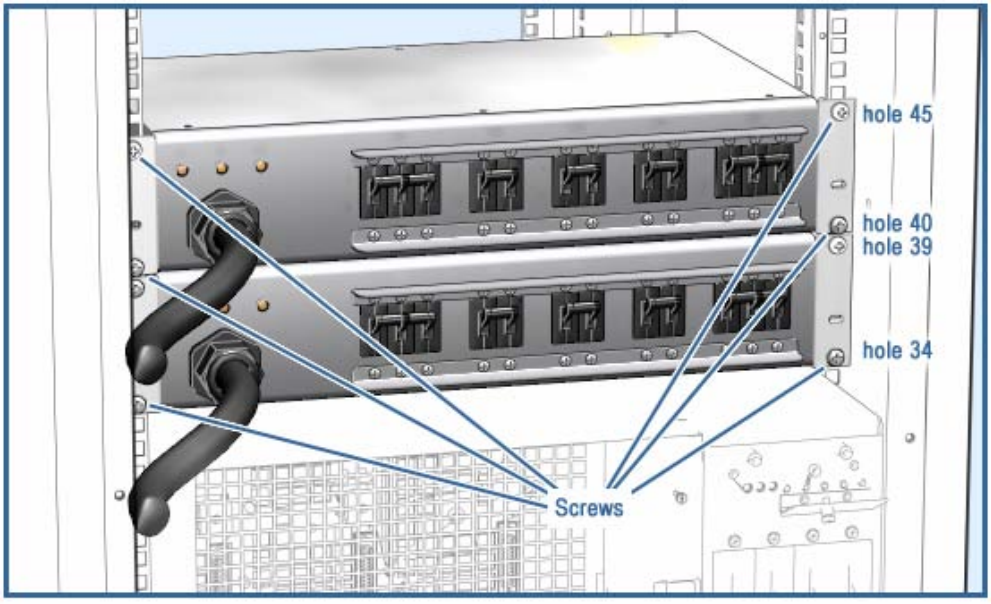


1. Unscrew old power cabinet from the system cabinet and expansion cabinet, if any.
2. Raise the leveling feet so that the cabinet can roll, and move the cabinet out of the system lineup.

4.7 Install Two PDUs in the Dual AC Power Cabinet

At the rear of the Dual AC power cabinet, install two of the PDUs removed from the old power cabinet. Install the two PDUs directly on top of the Dual AC FEPS.

Figure 4–12 Installing Two PDUs in the Dual AC Power Cabinet



1. Slide two PDUs out of the old power cabinet and set them down. Remove their mounting brackets from the old power cabinet, and reinstall them in the Dual AC power cabinet above the FEPS.
2. Slide the two PDUs into the mounting brackets in the Dual AC power cabinet and screw them in place (holes 34 and 39 for the bottom PDU and holes 40 and 45 for the to PDU) on the vertical rails at the back of the Dual AC power cabinet). See Figure 4–12.
3. Place the AC0 and AC1 labels (part no. 36-30363-01) to the right of the AC input cords on the PDUs. For consistency, put the AC0 label on the top PDU and the AC1 label on the bottom PDU.

4.8 Overview of Moving I/O Drawers

Remove any PCI drawers, storage shelves, wire frames, and so forth from the old power cabinet and reinstall them in the Dual AC power cabinet.

Figure 4–13 Sample I/O Configurations in Dual AC Power Cabinet

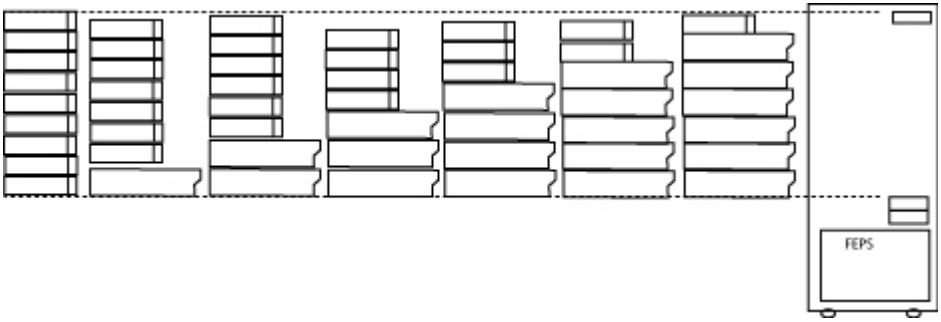


Figure 4–13 shows all possible I/O configurations that could be transferred from the old power cabinet to the Dual AC power cabinet. Some planning is necessary before you start.

Install from Bottom to Top, with PCI Shelves at the Bottom. Install the PCI and storage shelves at the bottom of the space available. Install any storage shelves above the PCI shelves.

Hole Span. In general, a PCI drawer spans 12 holes on the front rails of the Dual AC power cabinet. A storage drawer spans 9 holes.

Planning. Using an erasable marker, mark the top and bottom holes spanned by each PCI or I/O drawer you plan to insert in the cabinet. These marks will serve as reference points for installing cage nuts and the slides for the drawers, as discussed in Sections (whatever).

Section 4.9 gives directions for removing I/O from the old power cabinet. Section 4.10 tells how to install the I/O drawers in the Dual AC power cabinet.

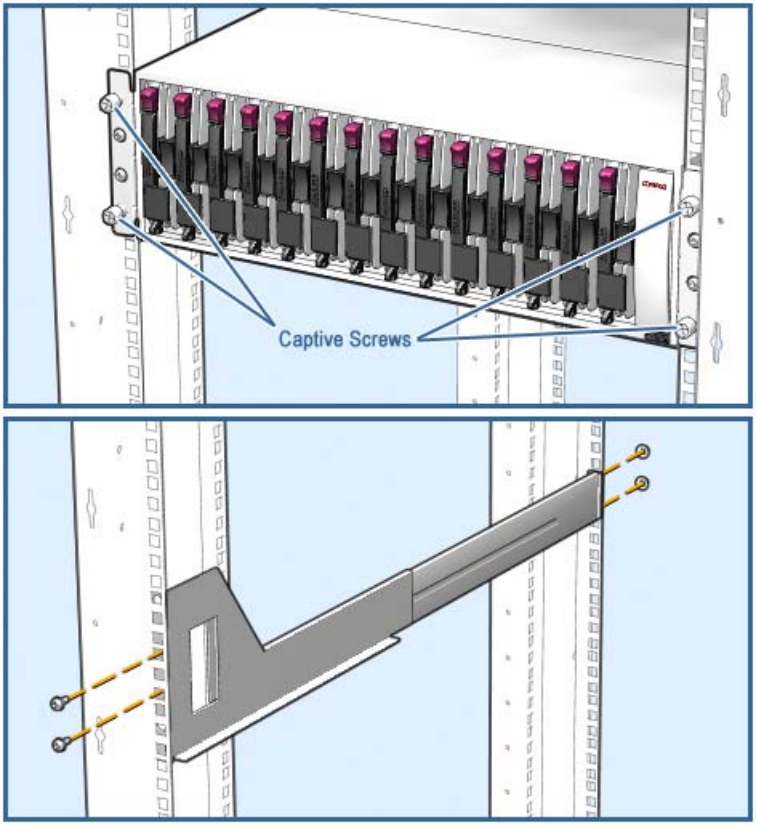
4.9 Remove I/O from Old Power Cabinet

Remove the PCI and storage drawers from the old power cabinet.

4.9.1 Storage Shelf Removal

Remove any storage shelves from the old power cabinet.

Figure 4–14 Removing the Storage Shelf



For each storage shelf in the old power cabinet:

Remove the 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. Set it aside.

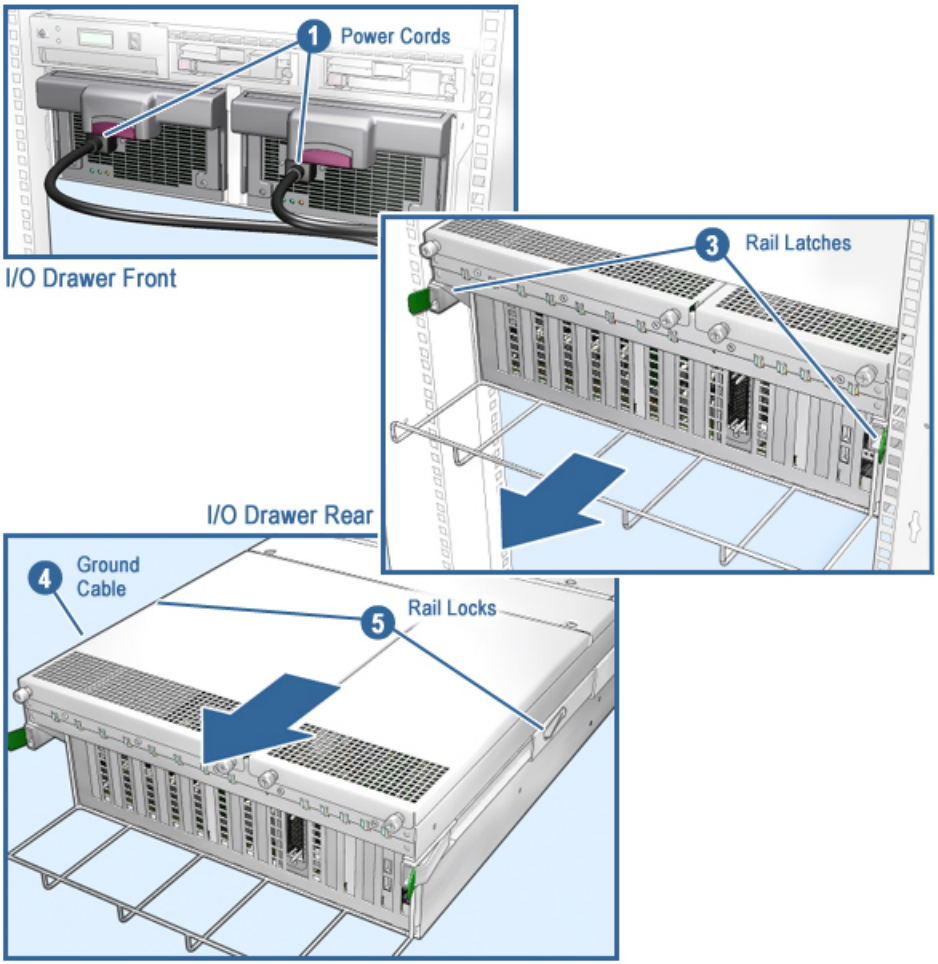
Remove the Rails

3. At the front of the cabinet, remove the two screws at the end of each rail. Remove the screw on the side of each rail near the front. Save all hardware.
4. At the rear of the cabinet remove the two square nuts and washers at the end of each rail. Remove the screw on the side of each rail near the rear. Take the rails out of the cabinet and set them aside.
5. Remove the rail brackets by removing the screw from each with a 5/16 socket and set them aside.

4.9.2 I/O Drawer Removal

Remove all PCI drawers from the old power cabinet.

Figure 4–15 Removing a PCI Drawer



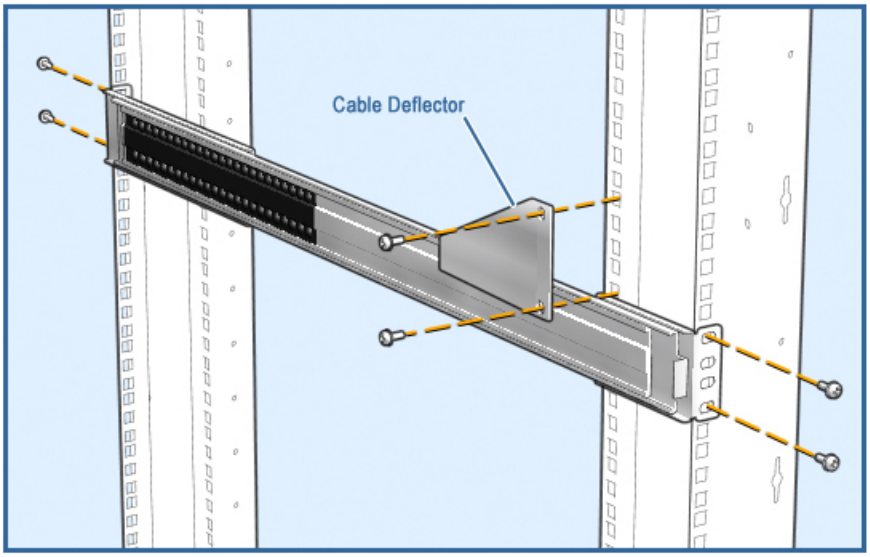
1. From the front of the cabinet, unplug the power cords (see Figure 4–15).
2. Remove the power supplies. Press the button on each handle and push the handle down. Slide each power supply out of the I/O drawer.
3. Release the two rail latches at the rear of the drawer that hold it in place and pull the drawer out until it locks.
4. Disconnect the ground strap from the right rear cabinet rail. Save the self-tapping screw.
5. Release the mounting rail locks and slide the I/O drawer out the rear of the cabinet.

Two people are needed to remove a PCI drawer.

4.9.3 Remove the PCI Drawer Slide Rails

Remove the slide rails for the PCI drawers just removed and set them aside.

Figure 4–16 I/O Drawer Slide Rails

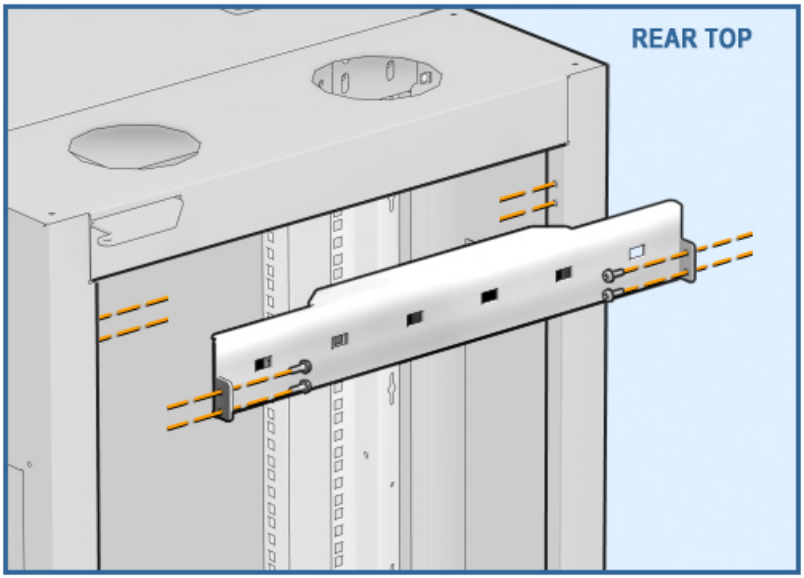


1. From the rear of the cabinet, remove the two screws from the end of each rail (see Figure 4–16). Save all hardware.
2. From the front of the cabinet, remove the two screws from the end of each rail. Set the slide rails aside.
3. Remove the cable deflector from the right front rail by removing the two screws. Set the cable deflector aside.
4. Remove and save all cage nuts.

4.9.4 Remove and Reinstall the Top Cable Support Assembly

Remove the cable support assembly at the top rear of the old power cabinet and reinstall it in the Dual AC power cabinet.

Figure 4–17 Cable Support Assembly



1. Remove the cable support assembly at the top rear of the old power cabinet and reinstall it in the same position in the Dual AC power cabinet. See Figure 4–17.

4.10 Install the I/O Drawers in the Dual AC Power Cabinet

In a 32P configuration, all PCI and storage drawers that were in the old power cabinet can be reinstalled in the Dual AC power cabinet.

4.10.1 Prepare for Installation

1. Install cage nuts as shown in Figure 4–18. The illustration shows the section of the rail in which to install the cage nuts.
2. Attach the cable deflector to the right front rail (see Figure 4–19).

Figure 4–18 Cage Nuts for I/O Drawer Installation

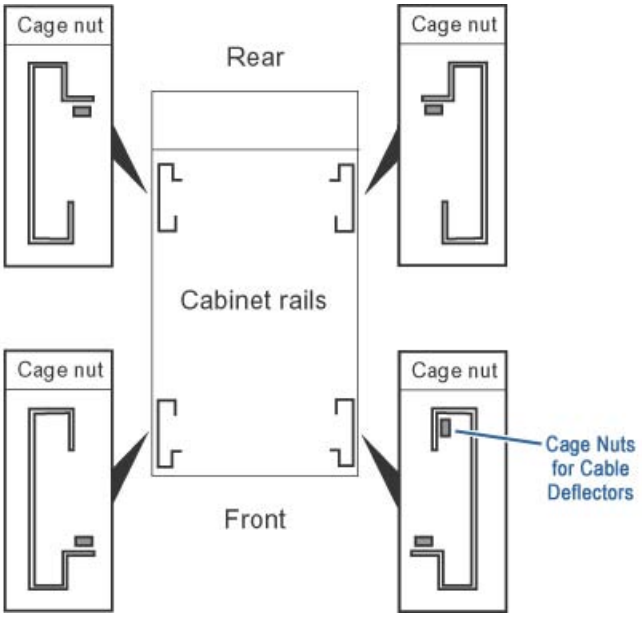
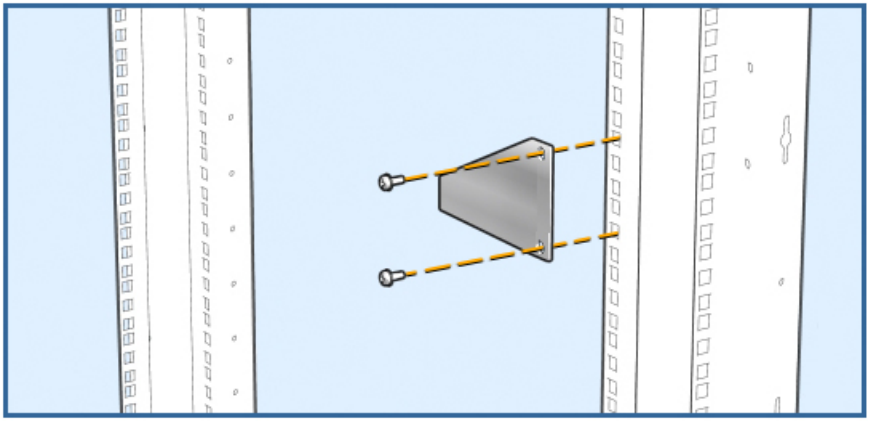


Figure 4–19 Cable Deflector



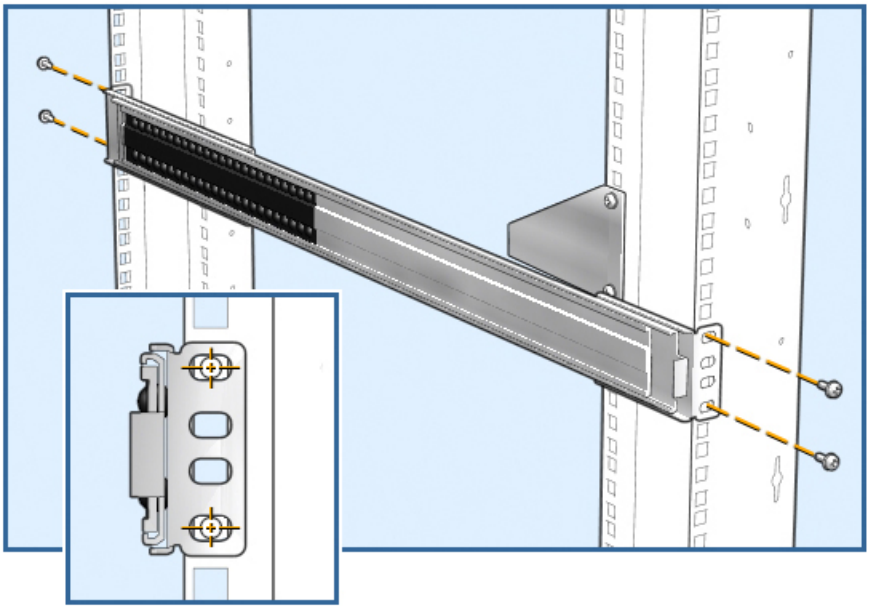
Using the markings that you made on the cabinet rails to show the hole span of the PCI and I/O drawers that you need to install, install the cage nuts as follows:

Span for I/O drawers	Relative Cage Nut Position for Slide (Front Rails)	Relative Cage Nut Position for Slide (Rear Rails)	Relative Cage Nut positions for Cable Deflector
PCI drawer 1 – 12 (bottom to top)	2, 5	2,5	5,9
Storage drawer 1 – 9 (bottom to top)	4, 6	1,3	N/A

4.10.2 Install the Slides

Install the slides for the I/O drawers in the Dual AC power cabinet.

Figure 4–20 Installing the I/O Drawer Slides



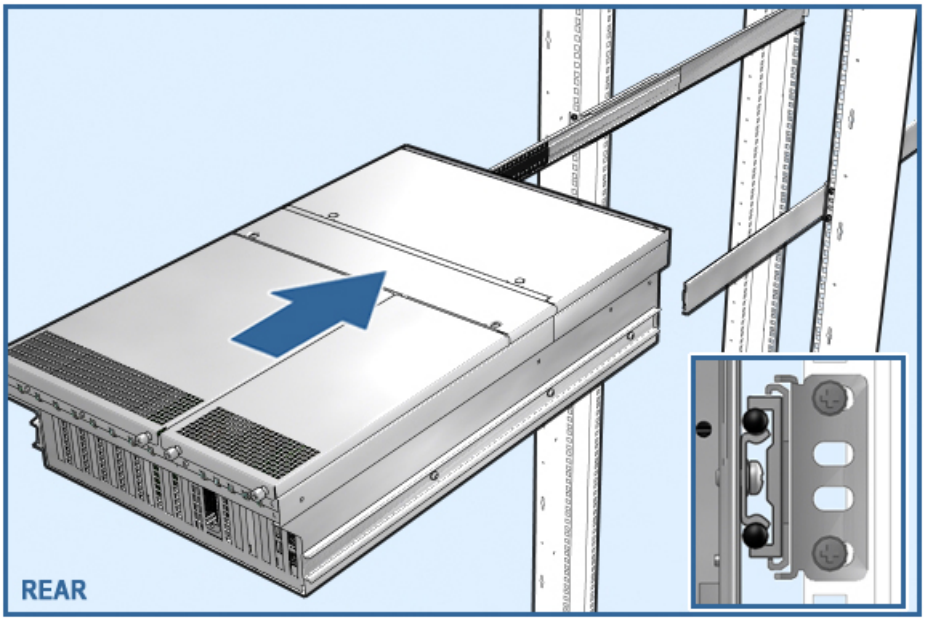
For each I/O drawer to be installed in the Dual AC power cabinet, mount the slides so that the space between them is slightly less than the width of the drawer.

1. Align one slide by centering the holes at both ends over the cage nuts in holes in the front and rear rails (see Figure 4–20). Attach the slide to the rails with 2 M6 screws at each end. Tighten the screws to secure the slide.
2. Align and attach the other slide, but do not tighten the screws. This allows for horizontal alignment during installation of the I/O drawer.

4.10.3 Install the I/O Drawers

Install the I/O drawers in the Dual AC power cabinet.

Figure 4–21 Aligning the I/O Drawer and Rail Slides



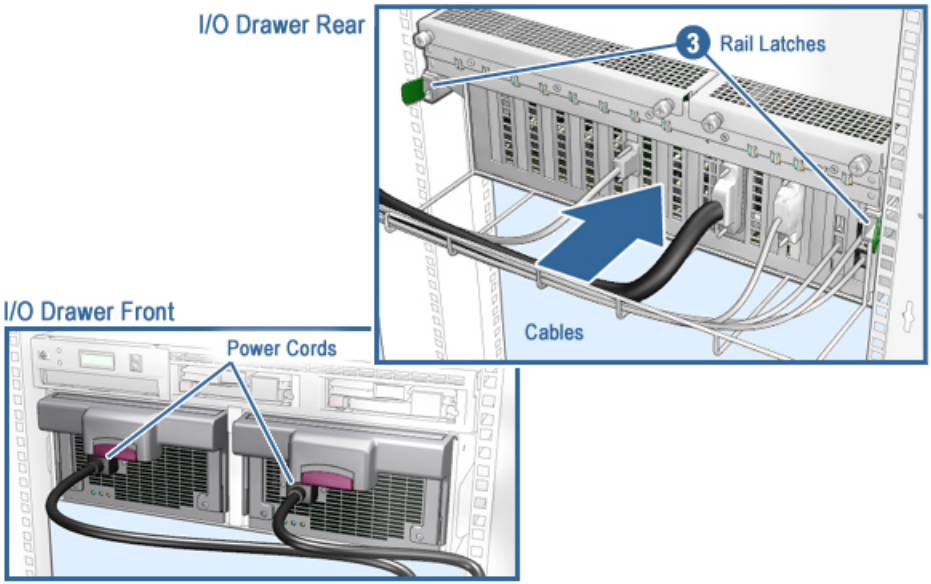
1. Check that no cables are in the way. If necessary, dress any cables that might interfere with installation of the I/O drawer.
2. At the rear of the cabinet pull the slides out. Align the slides with the drawer (see Figure 4–21) and place the drawer on them. The slides must be straight and vertical when the drawer is engaged.

NOTE: Failure to align the slides properly and to maintain the alignment as the drawer is installed can result in damage to the bearings.

3. Push the drawer into the cabinet until the slides and latches are fully engaged (see Figure 4–22).
4. Tighten the screws of the slide that was installed in step 2 of Section 4.10.2. This secures the slide in its final mounted position.

5. Connect the ground strap to the ground rail with the self-tapping screw.
6. At the front of the cabinet slide the power supplies in place. Push them in until they lock.
7. Replace the cable support assembly that was moved or removed in step 1 of Section 4.10.1.
8. Connect the power cords and cables removed

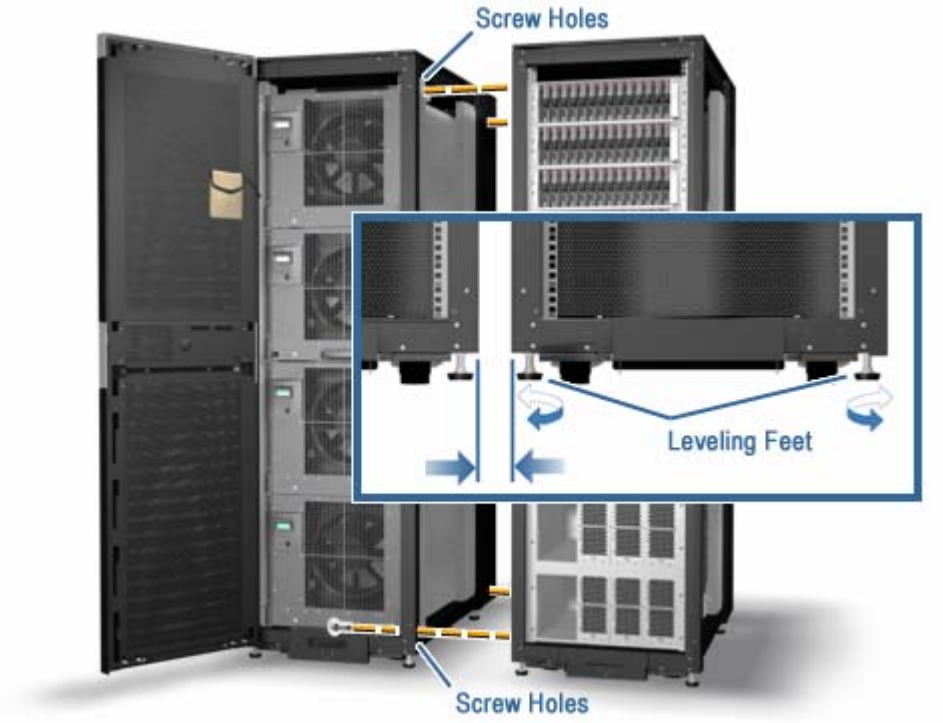
Figure 4–22 Installing the I/O Drawer



4.11 Install Dual AC Power Cabinet in System

Wheel the Dual AC power cabinet into the system lineup where the old power cabinet was. Move the stabilizer feet until the cabinet is at the same level as the other cabinets. Screw the cabinets together and attach the grounding wire.

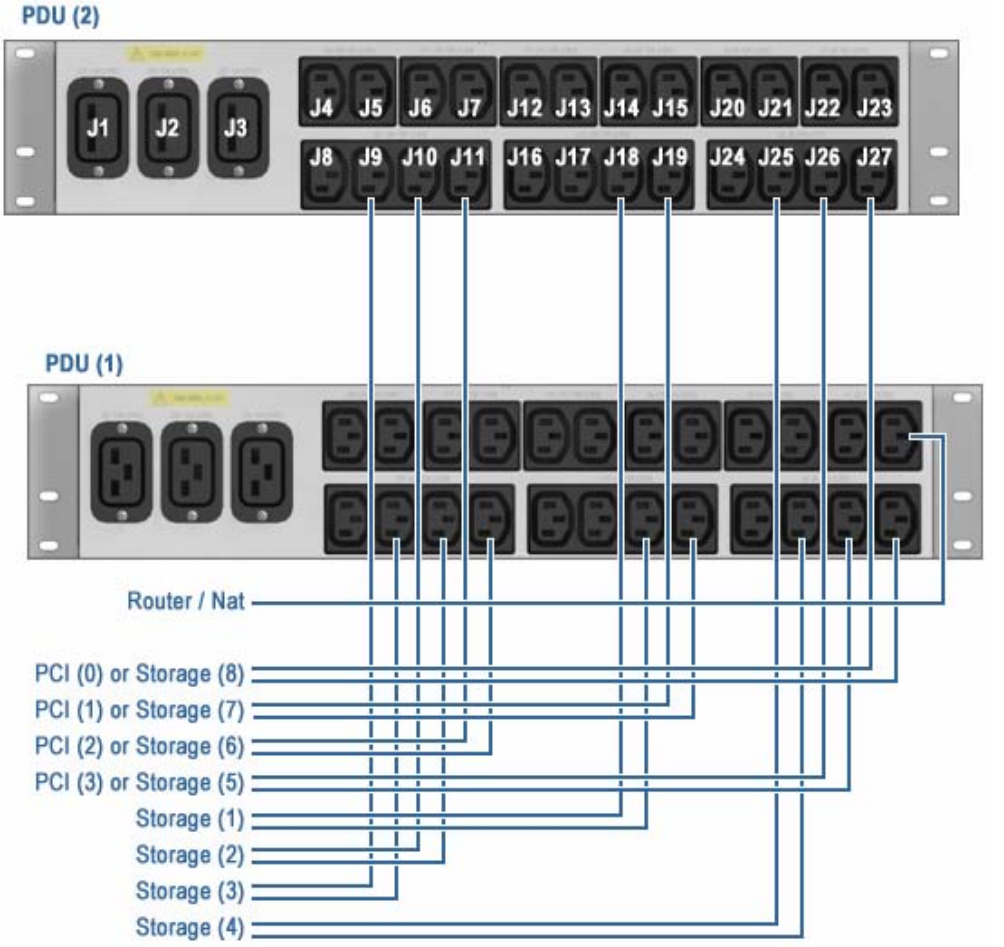
Figure 4–23 Installing the Dual AC Power Cabinet in the System



4.12 Recable Power Cables from I/O to the Two PDUs

To supply 48V power redundancy to the I/O in the entire system, attach the power cables to the circuits to both PDUs in the Dual AC power cabinet.

Figure 4–24 Recable Power Circuits to the PDUs

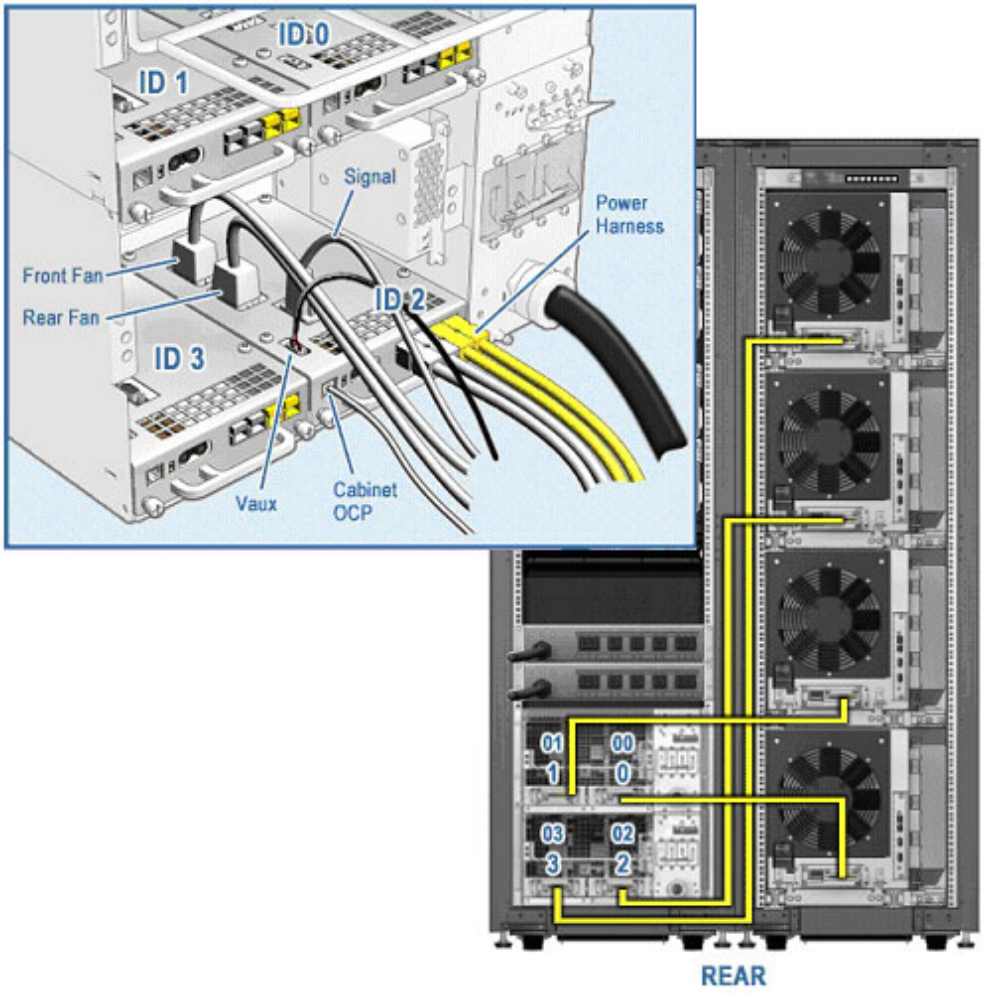


1. Recable any I/O drawers or connections from the system so that they can receive power from both the upper and lower PDU in the Dual AC power cabinet. An example of recabling to one PDU for part of a 32P system's I/O is shown in Figure 4–24.

4.13 Cable the 8P Drawers to the SDI

Attach the power harness and other cables from each 8P drawer to the appropriate SDI in the Dual AC power cabinet.

Figure 4–25 Cabling the 8P Drawers to the SDI



Locate the power cables from the 8P drawers that were set aside at the rear of the main cabinet. Use the labels provided in the new power cabinet (part no. 36-60393-01) to identify which 8P drawer a given cable is attached to. Table 4-3 shows the proper cable routing as well as the label usage. (A good place for a label is the top of the gray and yellow power harness cable at the SDI end.)

Table 4-3 Cable Routing and Labeling

FEPS	SDI No.	8P Drawer No.	Label
0	0	0	00
0	1	1	01
0	2	2	02
0	3	3	03

Repeat the following procedure for each SDI (Dual AC Interface module) and 8P drawer. Figure 4–25 shows which SDI is connected to which 8P drawer, as well as specific cable routing to an SDI (upper left box).

1. Starting with lowest drawer, thread the power harness from the system cabinet along the lower channel at the rear of the cabinet and into the power cabinet.
2. With the drawers in the closed position, prepare the target power SDI by first loosening its power retaining bracket.
3. Install the power cords (yellow and gray) to the SDI. (Considerable force is necessary to make a good power connection.) Lift and tighten the power retaining bracket.
4. Plug the following into the SDI module:

   Two-position Vaux power cord

   Two power cables to the fans

   MBM power signal interface cable

   Cabinet OCP cable

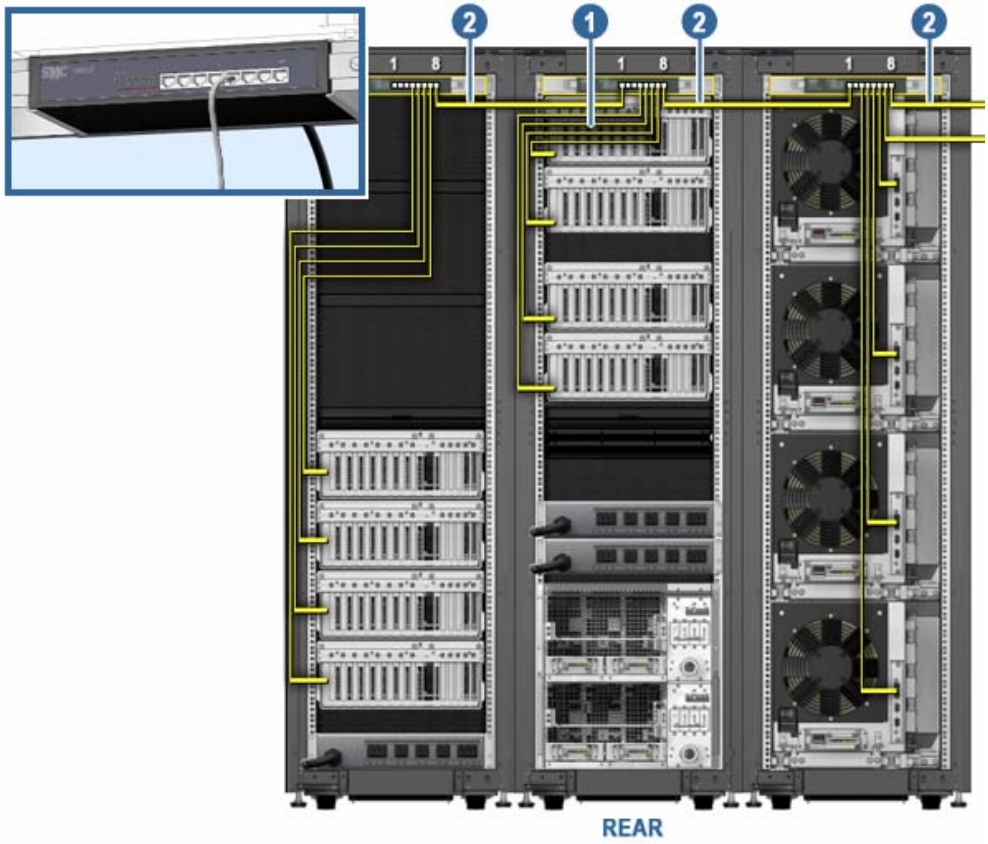
Repeat steps 2 through 4 for all drawers.

Stepping to the front of the system cabinet, pull the drawers out of the cabinet and make sure there is enough play in the power harnesses to allow the drawers to fully extend.

4.14 Connect the NAT Boxes

Connect the NAT box in the Dual AC power cabinet to the other cabinets.

Figure 4–26 Connecting the NAT Boxes



The I/O in the new Dual AC power cabinet must be located by server management software. This is accomplished through the internal LAN which consists, in part, of the microprocessors on the MBM and PBM modules. Thus, you must connect the PBM in each PCI drawer in the new power cabinet to the NAT box in that cabinet and then connecting Dual AC power cabinet's NAT box to the other NAT boxes in the system.

1. Seat both ends of all cables between the NAT box in the Dual AC power cabinet and all PCI drawers in the Dual AC power cabinet.
2. Using the 39-inch network cable (17–05097–01), make a single connection between the NAT box in the system cabinet and the Dual AC power cabinet, as shown in Figure 4–26. 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.

4.15 Set the ID Switches

Set the ID switch of the Dual AC power cabinet.

Figure 4–27 Dual AC Power Cabinet ID Switch

1. Set the ID switch of the Dual AC power cabinet to 1 (see Figure 4–27).
2. Leave the I/O drawer ID numbers as they were (see Figure 4–28).
3. At the rear of the new power cabinet, check to see that the CLM ID is set to 0 (see Figure 4–28).

Figure 4–28 Device ID Switches

4.16 Restore Power and Check LEDs

Plug the two 60-AMP AC power cables (see Section 4.2) from their chosen outlets to the FEPS. Also plug the 30-Amp power cables from the PDUs into their chosen outlets. Turn on the breaker switches on all the PDUs. Turn on the 3-position system cabinet OCP switch to "On: (1). All LEDs should light green.

Figure 4–29 Restore Power at System Cabinet OCP

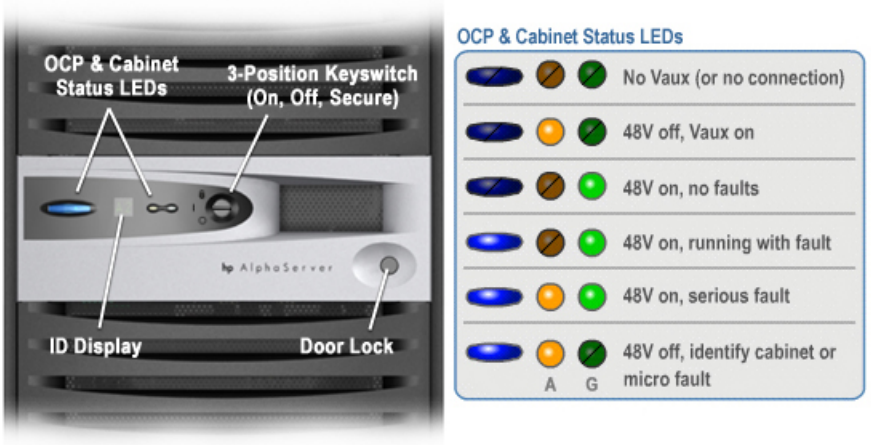


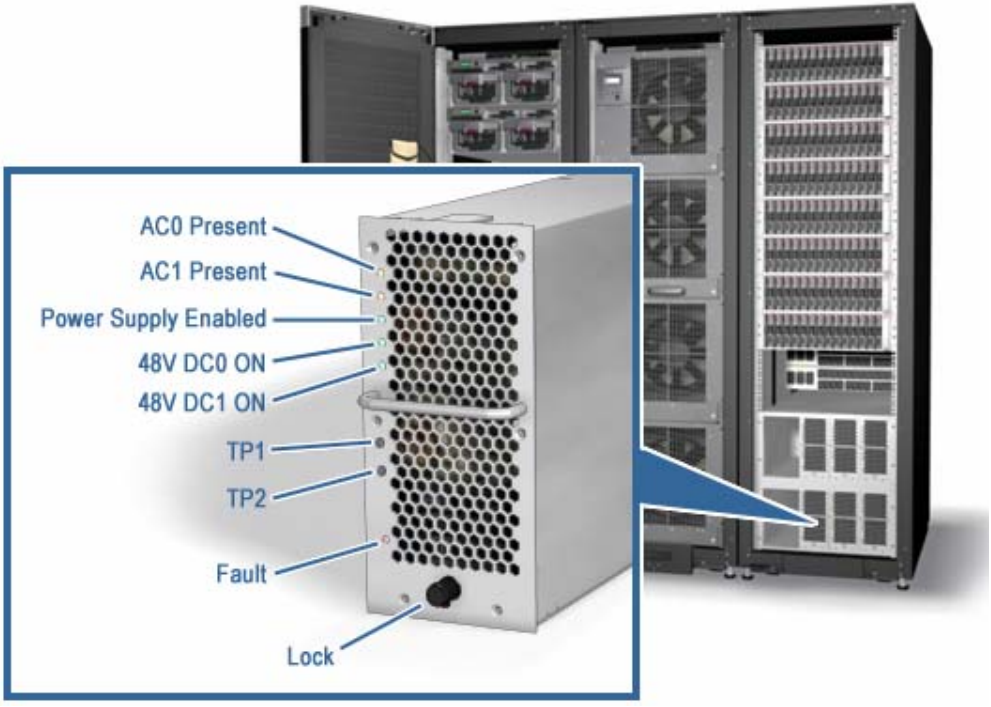
Table 4-4 OCP LED Table[1]

Blue LED	Amber LED	Green LED	Indication
Off	Off	Off	No Vaux (or no connection)
Off	On	Off	Vaux on, bulk power off
Off	Off	On	Bulk power on, no errors
On	Off	On	Bulk power on, running with fault
On	On	On	Bulk power on, serious fault
On	On	Off	Bulk power on, identify cabinet or micro fault

[1] The left LED is blue, the middle LED is amber, and the right LED is green.

1. Plug in the power cords from the two PDUs to the power outlets chosen for them.
2. Turn on the breaker switches on the two PDUs.
3. Turn the three-position keyswitch on the front main cabinet door to “On” (1). See Figure 4–29.
4. All of the LEDs should light green. If they do not, check other LEDs on the system to locate the component in error. For example, see Figure 4–30. If you cannot find a failed component, return to Section 4.5 and remove power from the system. Check to make sure that all cable connections are secure.
5. Once LEDs are on, reconfigure the system (see Section 4.17).

Figure 4–30 LEDs on Dual AC Power Supplies



4.17 Reconfigure and Verify the System

If you installed I/O from the old power cabinet entirely into the new power cabinet, you are ready to proceed to Chapter 6.

If you installed the old I/O into a different cabinet number, you need to let the firmware determine the new cabinet and drawer associations. At the MBM prompt enter this command:

```
MBM> set membership auto
```

4.17.1 Check SDI/8P Box Configuration After Power-Up

After you power up your system for the first time, check to see that the SDI and 8P box cabling meets the configuration rules described in Section 4.13. If the SDIs are miscabled, the system may power up, but problems could occur later in hard-partitioned platforms.

Below is a sample of the Power-Sub-systems configuration from an

mbm> show system

command on a 64P system. If all SDIs are connected to the proper 8P boxes, and the two cabinet OCP cables are connected to SDI 0 and 2, then the power mapping will show all SBBs in sequential their order and the cab ID will be the same for all SDI modules.

```
SBB Power Sub-systems:
  Cab Drw  Type  WPI/SDI  Power Supply  Powered SBB
                   0123   0123456789AB   SBB(cab,drw)
   2   0    SDI    p...   pppppp......   SBB( 0,0 )
   2   0    SDI    .p..   pppppp......   SBB( 0,1 )
   2   0    SDI    ..p.   pppppp......   SBB( 0,2 )
   2   0    SDI    ...p   pppppp......   SBB( 0,3 )
   2   1    SDI    p...   pppppp......   SBB( 1,0 )
   2   1    SDI    .p..   pppppp......   SBB( 1,1 )
   2   1    SDI    ..p.   pppppp......   SBB( 1,2 )
   2   1    SDI    ...p   pppppp......   SBB( 1,3 )
```

The following is an example of a miscabled system, in which the 8P box cabling for SDI 3 and SDI 2 were swapped. Also, the cabinet OCP cable was plugged into SDI slot 3, instead of SDI 2. Below is the relevant section of the Power-Sub-systems configuration in an

mbm> show system

command.

Notice that the SBBs are not reported in sequential order and SBB 0,3 is reported as being in a different cab.

```
SBB Power Sub-systems:
  Cab Drw  Type  WPI/SDI  Power Supply  Powered SBB
                   0123   0123456789AB   SBB(cab,drw)
   0   0    SDI    ...P   PPPPPP......   SBB( 0,3 )
   1   0    SDI    P...   PPPPPP......   SBB( 0,0 )
   1   0    SDI    .P..   PPPPPP......   SBB( 0,1 )
   1   0    SDI    ..P.   PPPPPP......   SBB( 0,2 )
```

Once the system has powered up and you have checked the SDI cabling as described above, proceed to Chapter 6 to run the QVET program.

Chapter 5
Install the Dual AC Power Upgrade for the Model 64

This chapter tells how to install the Dual AC power upgrade for a GS1280 Model 64 system.

- "Before" and "After" pictures of Dual AC power upgrade for Model 64 systems
- Unpack and deskid the Dual AC power cabinet
- Check Dual AC power cabinet components
- Perform an orderly shutdown of the system, and remove system power
- Remove the old power cabinet from the system lineup, and place it near the Dual AC power cabinet
- Move two PDUs from the old power cabinet to the Dual AC power cabinet
- Move storage and/or PCI shelves from the old power cabinet to the Dual AC-power cabinet.
- Install the Dual AC power cabinet in the system lineup
- Recable power cables from all I/O to the PDUs in the Dual AC power cabinet for dual-power supply
- Cable the Dual AC Interface (SDI) modules to the appropriate 8P drawers in the main cabinet
- Restore power and check LEDs

5.1 "Before" and "After" Pictures of Dual AC Power Upgrade for Model 64 System

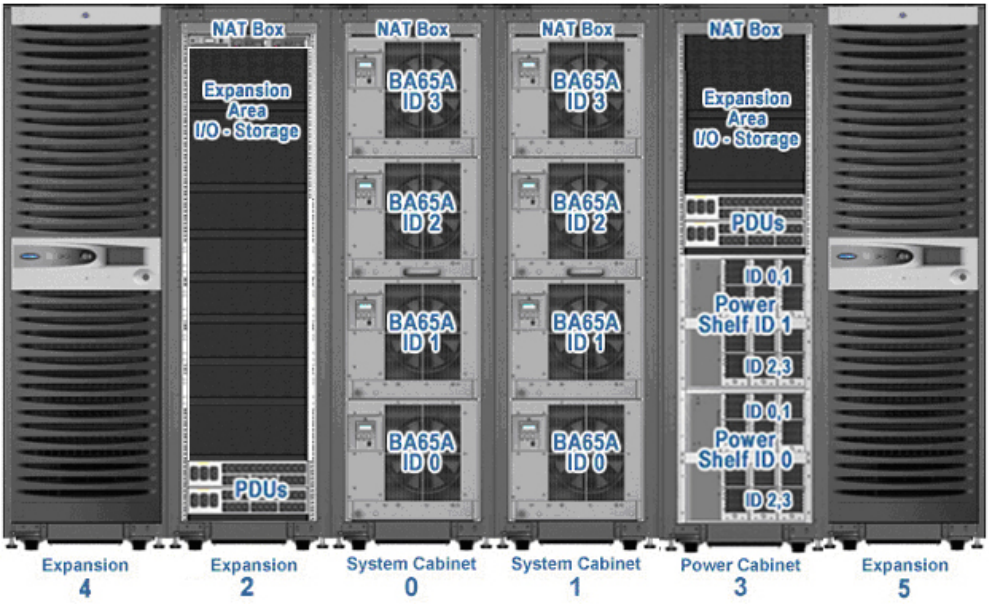
These pictures show the "before" and "after" setup for a Dual AC power upgrade on a GS1280 Model 64 system.

Figure 5–1 Typical 64P System Before Dual AC Power Installation

The system above shows two power cabinets; some 64P configurations have only one power cabinet with all 8 PDUs and power shelves in one cabinet. The following discussions refer to "power cabinet(s)" to allow for these two situations.

WARNING: Do NOT install using just these diagrams. Power must be removed, cables detached and reattached, and so forth.

Figure 5–2 Typical 64P System After Dual AC Power Upgrade



1. New Dual AC power cabinet replaces old power cabinet(s). New cabinet contains two new power shelves for dual feed AC power supplies for the eifht 8P drawers in the system cabinets.
2. Two 30-amp Power Distribution Units (PDUs) from old power cabinet moved to supply dual feed AC power to I/O in new power cabinet.
3. I/O shelves from old power cabinet moved to Dual AC power cabinet.
4. Use old power cabinet for any I/O that will not fit in new power cabinet. Retain or move two 30-amp Power Distribution Units (PDUs) to supply power to I/O in the newly created expansion cabinet.

5.2 Preparation: 60-Amp AC Power Input

The Dual AC power cabinet uses 60-Amp AC input. Before you install the Dual AC power cabinet, you *must* make sure that dual supplies of this input and proper plugs and cords are available. Dual supplies of 30-Amp AC power are still required for I/O (PCI boxes and storage).

Table 5-1 30-Amp AC Power Input (Old AC Power Requirements)

Power	US/Canada	Japan	Europe
Voltage	120/208	200	380/415
Current	24A	24A	24A
Phase	3W + N + G	3W + N + G	3W + N + G
Frequency	50-60 Hz	50-60 Hz	50-60 Hz
Kva, Model 32, 1 I/O Drawer, 1 StorageWorks Shelf	10.990	10.990	10.990
Current per phase	11.7A	11.7A	7.3A
Power outlets (internal)	3x C19, 24 x C13	3 x C19, 24 x C13	3 x C19, 24 x C13
Number of PDUs required	4, 8 for dual-AC	4, 8 for dual-AC	4, 8 for dual-AC
Line connection	Fixed cord and plug	Fixed cord and plug	Fixed cord and plug
Power cord	5 x 10AWG	5 x 10AWG	5 x $4mm^2$
Power plug	L21-30P, Hubbell 2811	L21-30P, Hubbell 2811	Hubbell 532P6W
Main breaker	30A	30A	30A
Sub-breakers	3x20A(2 pole) 1x20A(3 pole)	3x20A(2 pole) 1x20A(3 pole)	3x15A(2 pole) 1x15A(3 pole)

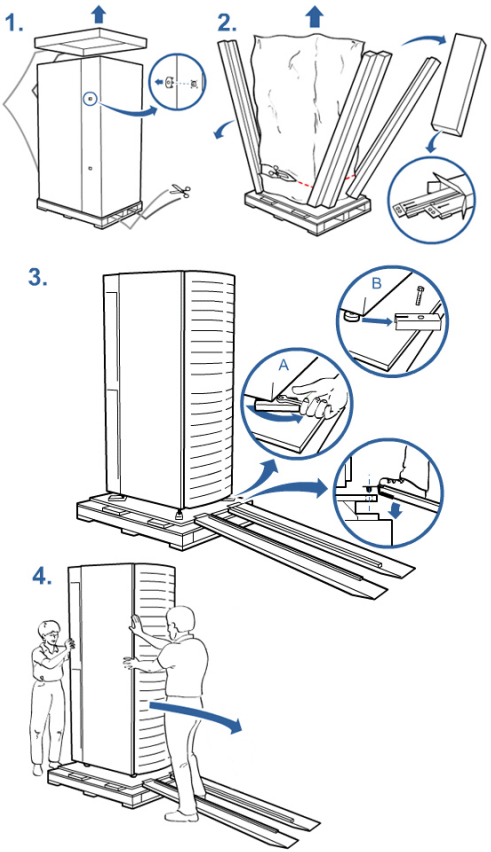
Table 5-2 60-Amp AC Power Input (AC Power Requirements for Dual AC Power Supply Cabinet)

Power	US/Canada	Japan	Europe
Voltage	120/208	200	380/415
Current	48A	48A	25A
Phase	3W + G	3W + G	3W + N + G
Frequency	50-60 Hz	50-60 Hz	50-60 Hz
Kva, Model 32, 1 I/O Drawer, 1 StorageWorks Shelf	10.1	10.1	10.1
Number of PDUs required	2 Main, 2 Aux	2 Main, 2 Aux	2 Main, 2 Aux
Main PDU			
Current, per phase	24A	25A	16A
Line Connection	fixed cord & plug	fixed cord & plug	fixed cord & plug
Power Cord	4 x 8AWG	4 x 8AWG	5 x 4 mm2
Power Plug	IEC 60A, Hubbell 460P9W	IEC 60A, Hubbell 460P9W	IEC 32A, Hubbell 532P6W
Auxiliary PDU			
Current, per phase	2.5A	2.5A	1.3A
Line Connection	fixed cord & plug	fixed cord & plug	fixed cord & plug
Power Cord	5 x 10AWG	5 x 10AWG	5 x 4 mm2
Power Plug	L21-30P, Hubbell 2811	L21-30P, Hubbell 2811	Hubbell 532P6W

5.3 Unpack and Deskid the Dual AC Power Cabinet

To add the new Dual AC power option for the 64P configuration, you need to unpack and deskid the Dual AC power cabinet.

Figure 5–3 Unpacking and Deskidding the Dual AC Power Cabinet



The cabinet is 2 meters tall and will not fit through doors that are 80 inches tall while on their skids. You may have to de-skid them before getting them into the computer room.

Be sure all stabilizer feet are raised before de-skidding.

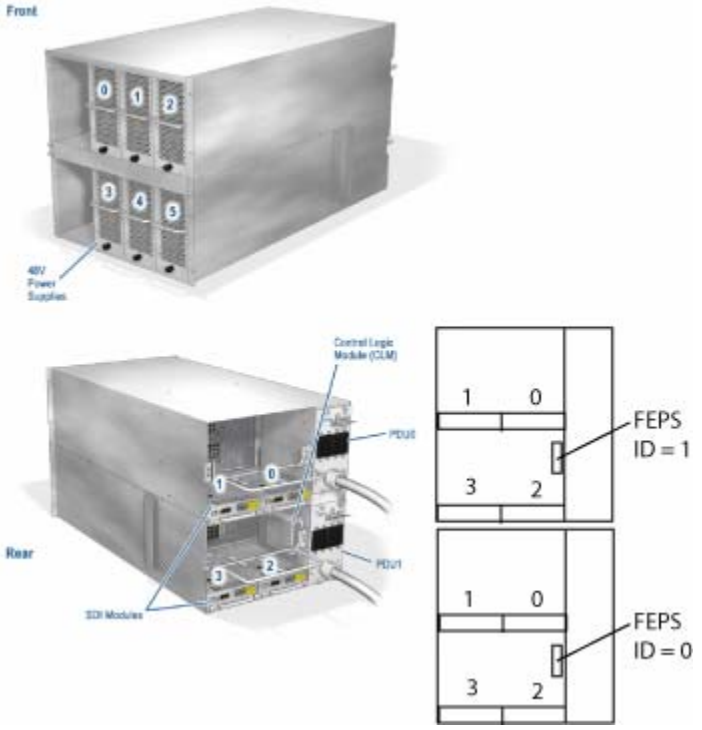
Depending up where you are in the world, you may receive a Dual AC power cabinet completely enveloped in either heavy-duty corrugated cardboard or "shrink wrapped". In either case, pictured instructions showing how to unpack and de-skid the cabinet are supplied with the packaging.

1. For a cabinet shipped in corrugated cardboard, cut the box straps, remove the top, remove the screws that hold the corrugated sides together and remove them. If the system came "shrink wrapped", simply remove the wrap.
2. Remove the containers holding the ramps and attach the ramps to the pallet. Inset C in Figure 5–3 shows how the rails are held onto the pallet at the top. Step on the rail until it is firmly attached to the pallet. **Be sure to place the ramps on the pallet such that each ramp's side rails face inward, so that the cabinet wheels cannot fall off the rail as the cabinet proceeds downward.**
3. Remove the brackets by which the cabinet is attached to the pallet (insets A and B). **Retract all stabilizer feet completely into the cabinet before de-skidding.** This is important. If the feet are not retracted, they may contact the floor at the bottom of the ramp and bend.
5. At least two people are required to remove the cabinet from the skid.

5.4 Check Dual AC Power Cabinet Components

Check your upgrade cabinet to familiarize yourself with its components. At the bottom of the cabinet are two Front End Power Supply (FEPS) that supply dual feed AC power for the eight 8P drawers in the system cabinets.

Figure 5–4 Front End Power Supply (FEPS)



The Dual AC Dual-Power Upgrade option for a 64P system (Part number 3X-H7514-BD) consists of a cabinet containing two Dual AC Front-End Power Supplies (see Figure 5–4) at the bottom of the cabinet and a NAT box at the top of the cabinet, and some labels.

Front End Power Supply (FEPS)

The two Front End Power Supply (FEPS) each accept AC power through the two Power Distribution Units (PDUs) shown at the right of the rear of the cabinet. (The two AC input cables for each FEPS are not actually part of the Dual AC power cabinet kit. You must obtain these four cables and the corresponding two 60-Amp power sources before attempting the installation, as described in Section 5.2.)

AC power from each PDU is converted to 48V by the six 48V power supplies at the rear of the cabinet. One power supply provides redundant power in case of failure.

The 48V power is distributed to four 8Pdrawers through the four Dual AC Interface (SDI) modules at the rear of the cabinet. Each SDI module provides power to an 8P system drawer. An SDI module allows the MBM to turn 48V on and off, service faults, and provide status on the power. Also, the SDI generates auxiliary voltage through a DC-DC converter.

The FEPS ID and the SDI number identify which 8P drawer is being supplied with power. The SDI numbers 0 – 3 identify the 8P drawer ID within the cabinet, and the FEPS ID identifies the cabinet. (See Section 5.13.)

The Control Logic Modules provide an interface between the SDI modules and the Dual AC Power Supplies via an I^2C Bus.

NAT Box

The NAT box at the top of the cabinet is used for inter-cabinet communication between any PBMs (logic in PCI I/O drawers) and the controlling MBM (logic in an 8P drawer).

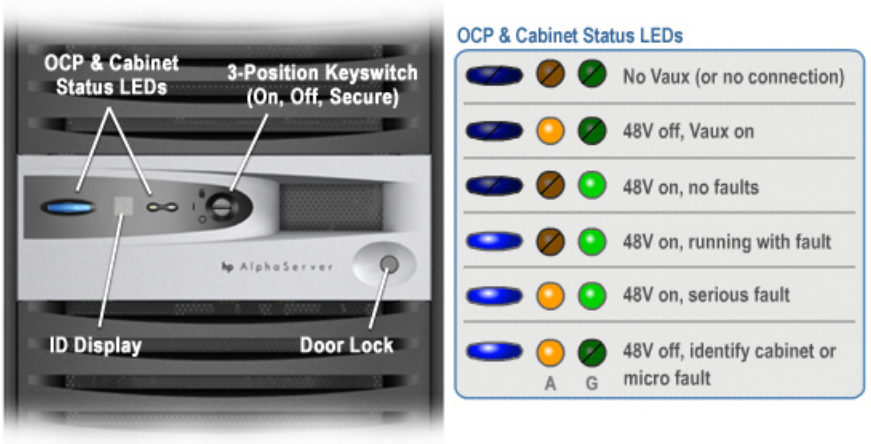
Labels

Manufacturing engineers use labels to identify which 8P drawer should be attached to which SDI modules. A packet of similar labels (Part no. 36-60393-01) should be included in the cabinet for the field engineer to use to label the matching cables from the 8P drawers.

5.5 Shut Down System Power

Back up all important data. Shut down all applications and shut down the operating system in all partitions. Turn off the power at the system cabinet OCP, switch all PDU breakers to off, and unplug the system.

Figure 5–5 Turn Off Power at System Cabinet OCP Switch



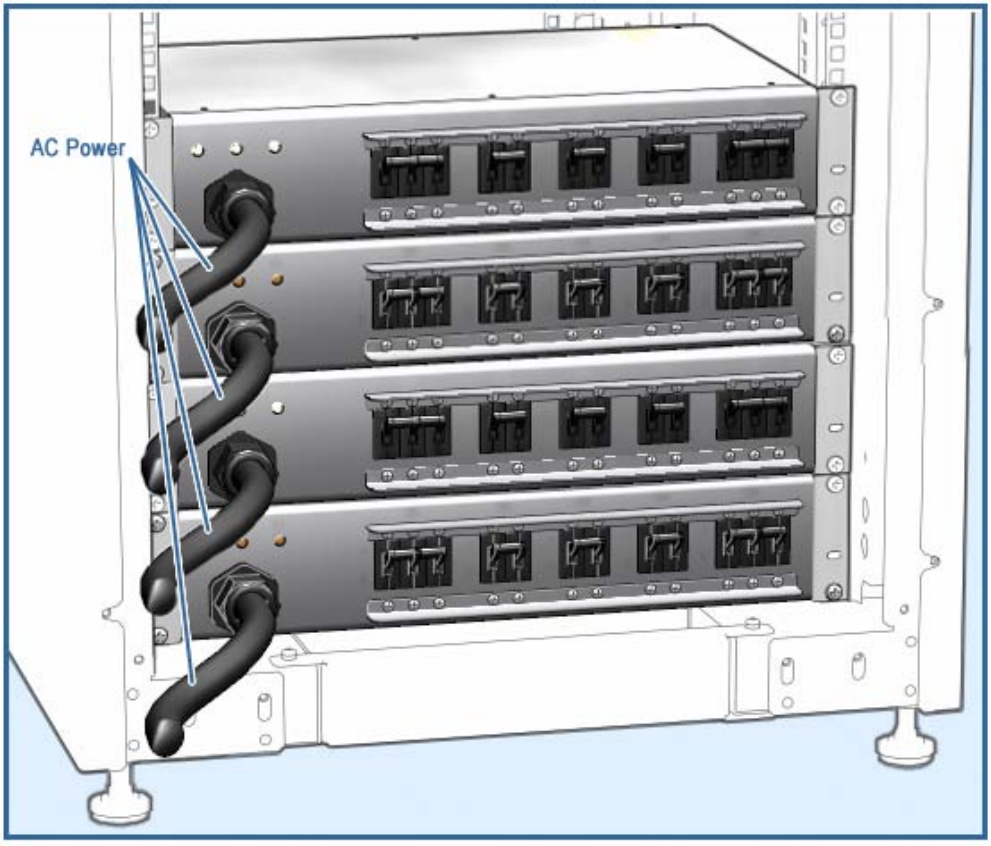
1. Back up all important data on the system.
2. Shut down all applications and shut down the operating system in all partitions.
3. Turn off power to the cabinet at the OCP, turning the 3-position switch to 0 (see Figure 5–5).
4. Wait for the orderly shutdown to complete.
5. At the rear of the old power cabinet(s), turn the breaker switches on the all the PDUs to the off position.
6. Unplug the old power cabinet(s) and the system cabinet from their power source and wait 5 minutes for any residual power to dissipate.

5.6 Remove Old Power Cabinet(s)

Remove the old power cabinet(s) from the system lineup. This involves unplugging the AC cords to the old power cabinets from the wall outlets and unplugging all the cords between the old power cabinets and other cabinets, so that the old power cabinets can be moved.

5.6.1 Unplug AC Input Cables to Old Power Cabinet(s)

Unplug the AC input cables to all the PDUs in the old power cabinets from the wall or ceiling outlet.

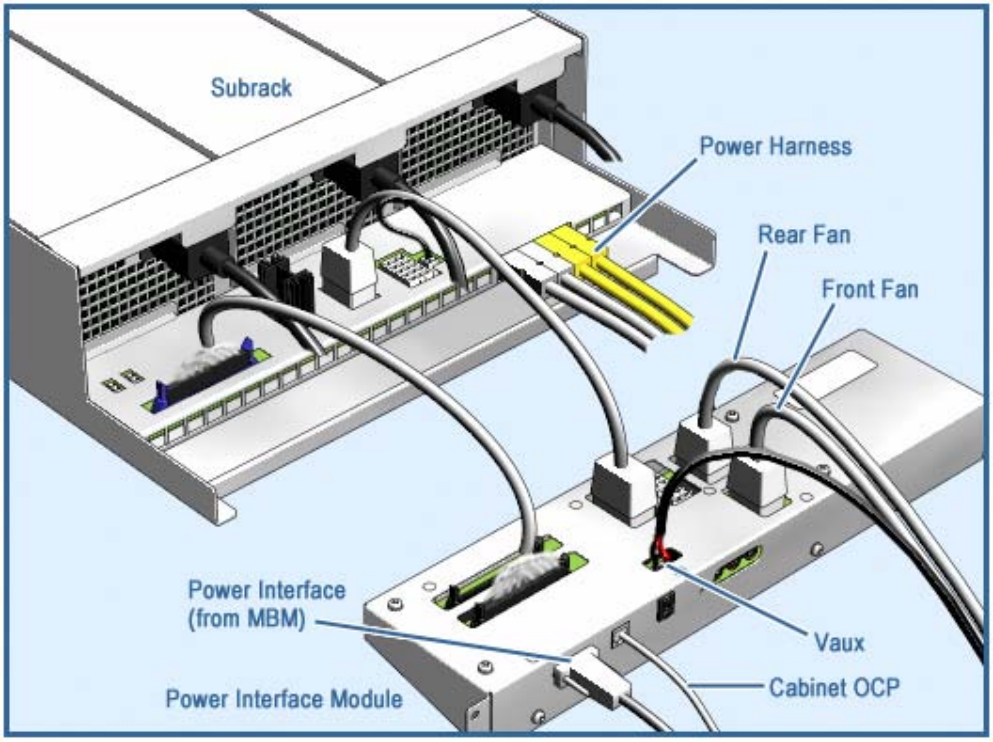


1. At the rear of the old power cabinet(s), unplug all the AC input cables that go to the PDUs from their wall outlets. (These cables cannot be unplugged from the PDUs themselves, and will follow each cabinet when it is removed from the system lineup.)

5.6.2 Remove 8P Drawer Cabling from the Power Interface Assemblies (PIs)

At the rear of the old power cabinet(s), remove the cabling that runs from the old power cabinet to each of the 8P drawers.

Figure 5–6 Remove Cabling from the Old Power Cabinet(s) to 8P Drawers

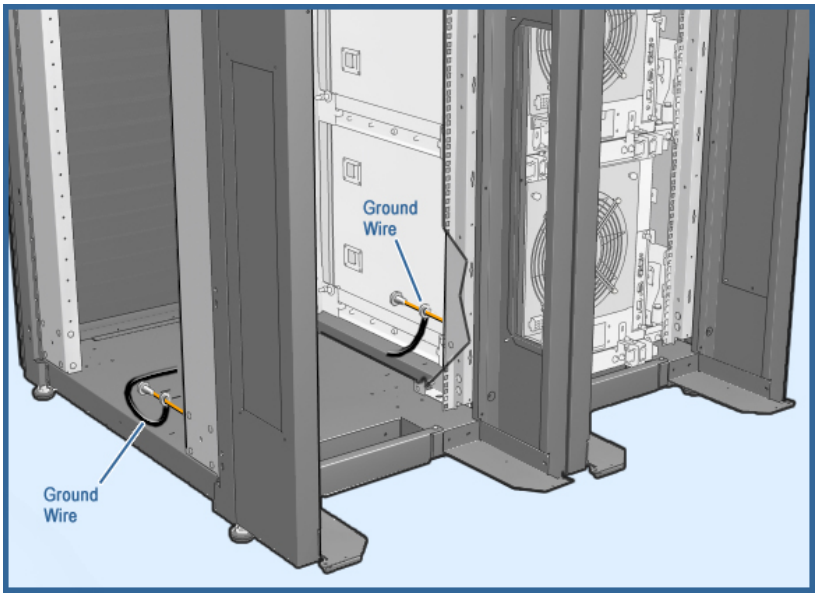


1. At the rear of the old power cabinets, disconnect the MBM interface cable, the cabinet OCP cable, the Vaux cable, and the fan cables from each of the four Power Interface Assemblies (PIs) and power subracks in the old power cabinet. Let them rest beside the system cabinets, still connected to the eight 8P drawers in these cabinets.

5.6.3 Detach the Ground Cable from the Old Power Cabinet(s)

Detach the ground cable from the old power cabinet(s).

Figure 5–7 Detaching the Ground Cable from the Old Power Cabinet(s)

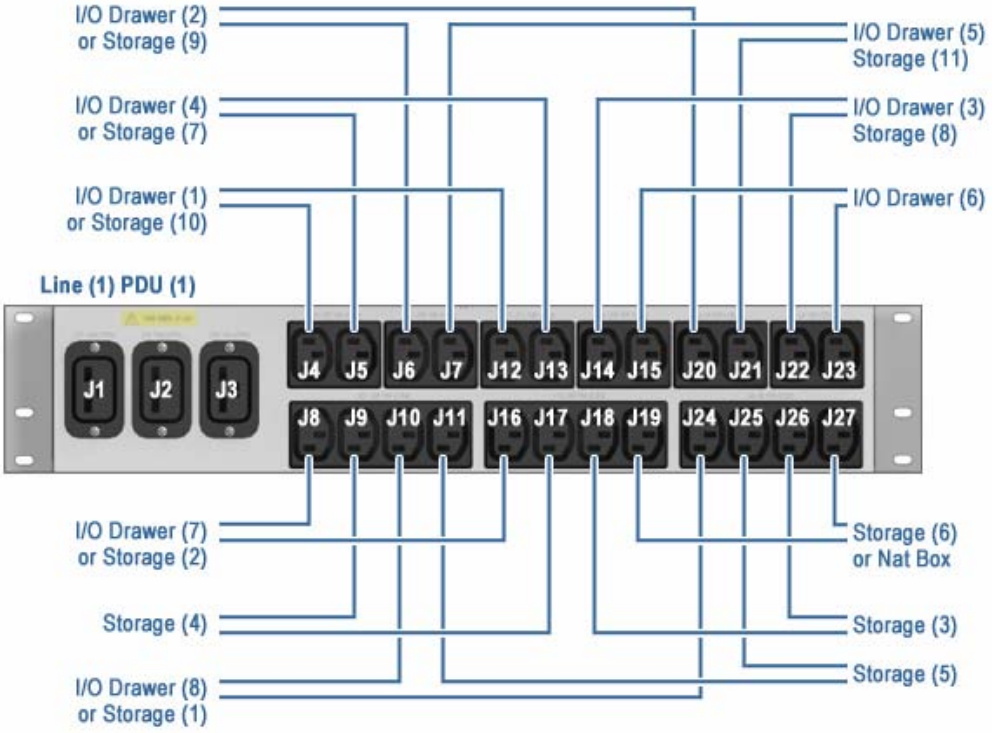


1. Detach the ground cables running from other cabinets into the old power cabinet(s).

5.6.4 Remove All Power Cables from PDUs in the Old Power Cabinet(s)

Detach all power cables (to PCI and storage shelves) from all the PDUs in the old power cabinet(s). Leave the cables attached to the I/O shelves.

Figure 5–8 Detaching I/O cables from PDUs in the Old Power Cabinet



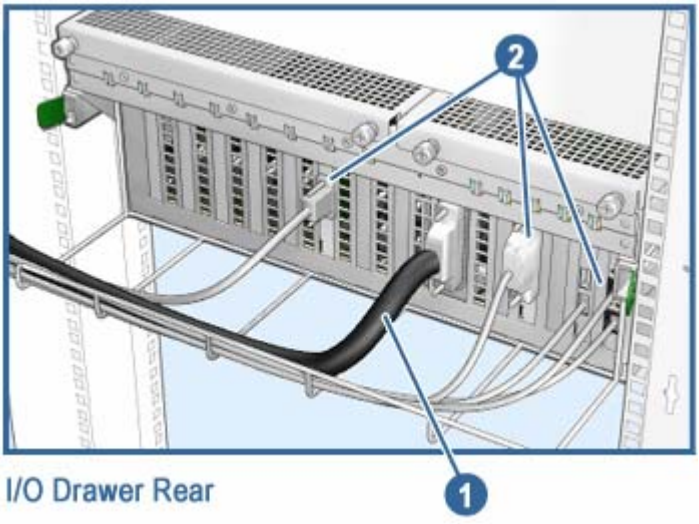
1. At the rear of the old power cabinet(s), disconnect from the PDUs the power cables running to I/O shelves in those cabinets. Place the cables, still connected to their I/O shelves, so that you will be able to move the old power cabinet out of the lineup. Suggestion: label each power cable as to destination cab and shelf.

   Figure 5–8 shows a typical single-source power setup from a PDU to I/O shelves.

5.6.5 Detach Cables to I/O Drawers and Modules in Old Power Cabinet(s)

At the rear of the old power cabinet(s), detach or disconnect all cables and inter-connects to PCI shelves, I/O shelves, storage/disk units, and so forth, in preparation for removing the old cabinet. Carefully place cables and interconnects aside while leaving the opposite end connected.

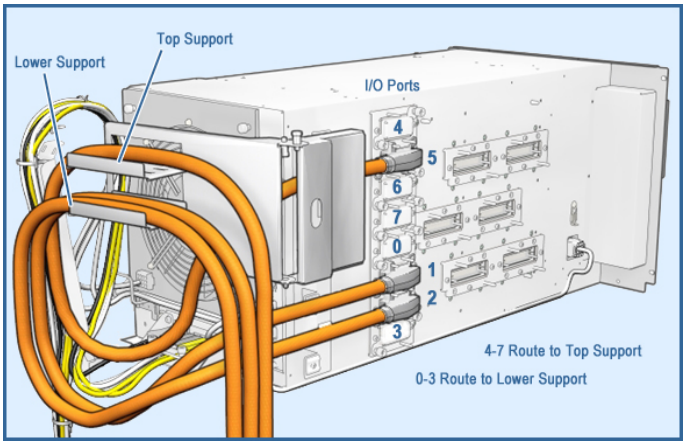
Figure 5–9 Removing Cables from I/O Drawer and Modules in Old Power Cabinet



For each PCI drawer in the old power cabinet(s):

1. Remove the large cable (IO7 hose cable) that connects the PCI drawer to the 8P drawer. It is crucial that this cable be reattached to the same PCI box when it is reinstalled. (See Figure 5–10 for an example of an 8P drawer with three cables to three PCI drawers. You would want to label or mark each cable – at the PCI drawer end – with the PCI drawer number to which each is attached, so that you will be able to connect them properly when they are reinstalled.)
2. Remove all of the cables from the PCI drawer that run to various I/O shelves and devices.

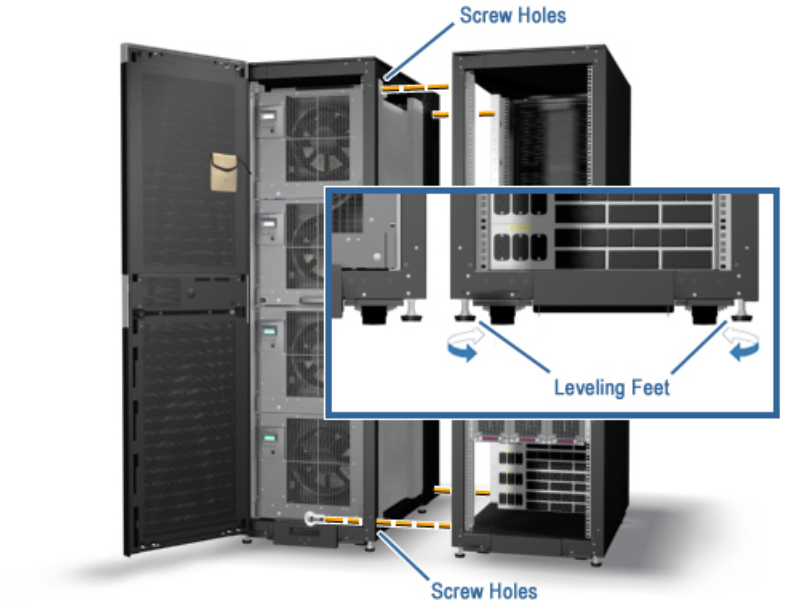
Figure 5–10 I/O Cabling to CPU Drawer



5.6.6 Remove the Old Power Cabinet(s)

Unscrew the old power cabinet(s) from their surrounding cabinets, raise the leveling feet so that the cabinets can be rolled, and roll the cabinets out of the system lineup and place them near the new Dual AC Power Cabinet.

Figure 5–11 Removing the Old Power Cabinet(s)

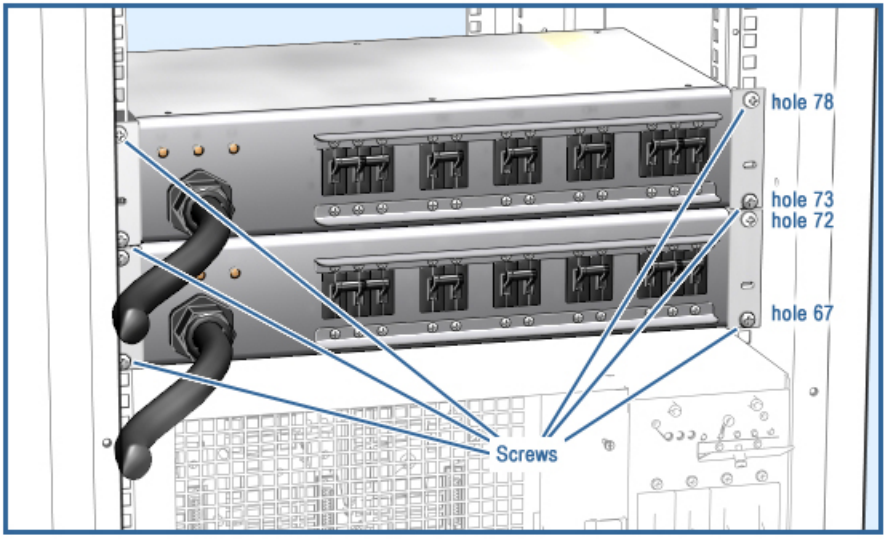


1. Unscrew old power cabinet(s) from the system cabinet(s) and expansion cabinet(s), if any.
2. Raise the leveling feet so that the cabinet(s_ can roll, and move the cabinet(s) out of the system lineup.

5.7 Install Two PDUs in the Dual AC Power Cabinet

At the rear of the Dual AC power cabinet, install two of the PDUs removed from the old power cabinet. Install the two PDUs directly on top of the Dual AC FEPS.

Figure 5–12 Installing Two PDUs in the Dual AC Power Cabinet



1. Slide two PDUs out of the old power cabinet and set them down. Remove their mounting brackets from the old power cabinet, and reinstall them in the Dual AC power cabinet above the FEPS.
2. Slide the two PDUs into the mounting brackets in the Dual AC power cabinet and screw them in place (holes 67 and 72 for the bottom PDU and holes 73 and 78 for the top PDU) on the vertical rails at the back of the Dual AC power cabinet). See Figure 5–12.
3. Place the AC0 and AC1 labels (part no. 36-30363-01) to the right of the AC input cords on the PDUs. For consistency, put the AC0 label on the top PDU and the AC1 label on the bottom PDU.

5.8 Overview of Moving I/O Drawers

Remove any PCI drawers, storage shelves, wire frames, and so forth from the old power cabinets and reinstall them in the Dual AC power cabinet.

Figure 5–13 Sample I/O Configurations in Dual AC Power Cabinet

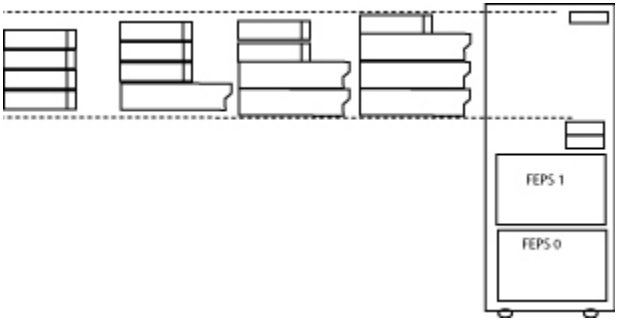


Figure 5–13 shows all possible I/O configurations that could be transferred from the old power cabinet(s) to the Dual AC power cabinet. If you need more space for I/O from the old cabinets, you will need to use (one of) the old power cabinets to create an expansion cabinet for the additional I/O. Some planning is necessary before you start.

Install from Bottom to Top, with PCI Shelves at the Bottom. Install the PCI and storage shelves at the bottom of the space available. Install any storage shelves above the PCI shelves.

Hole Span. In general, a PCI drawer spans 12 holes on the front rails of the Dual AC power cabinet. A storage drawer spans 9 holes.

Planning. Using an erasable marker, mark the top and bottom holes spanned by each PCI or I/O drawer you plan to insert in the cabinet. These marks will serve as reference points for installing cage nuts and the slides for the drawers, as discussed in Section 5.10.2.

If you need an expansion cabinet for I/O from the old power cabinet(s), make markings for I/O to be transferred to the expansion cabinet. For easier access, you may want to put the overflow I/O near the top of the expansion cabinet. In general, place PCI drawers below the storage drawers.

Section 5.9 gives directions for removing I/O from the old power cabinet. Section 5.10 tells how to install the I/O drawers in the Dual AC power cabinet.

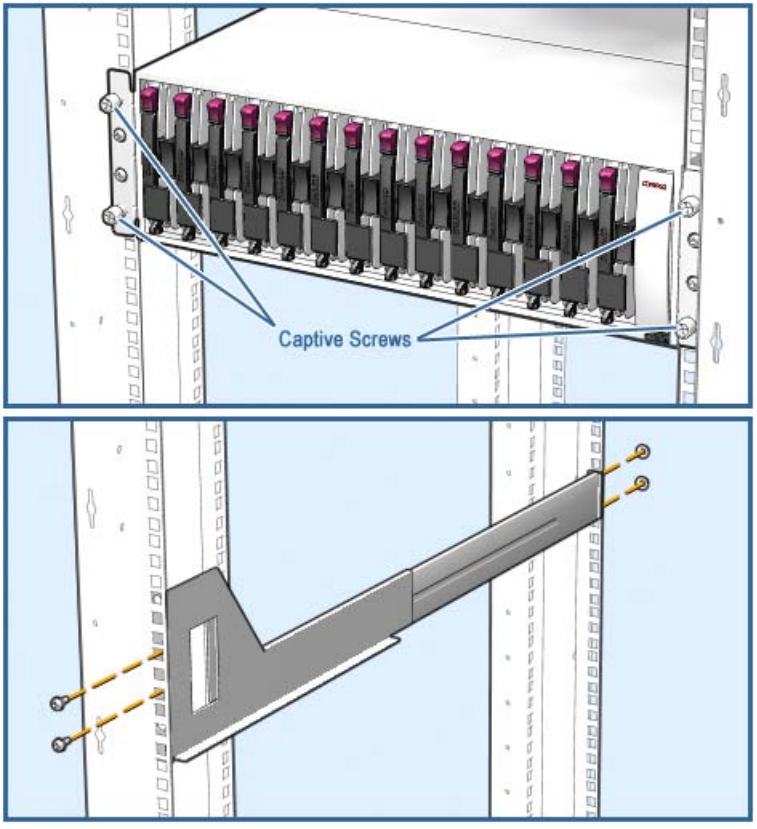
5.9 Remove I/O from Old Power Cabinet

Remove the PCI and storage drawers from the old power cabinet.

5.9.1 Storage Shelf Removal

Remove any storage shelves from the old power cabinet.

Figure 5–14 Removing the Storage Shelf



For each storage shelf in the old power cabinet:

Remove the 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. Set it aside.

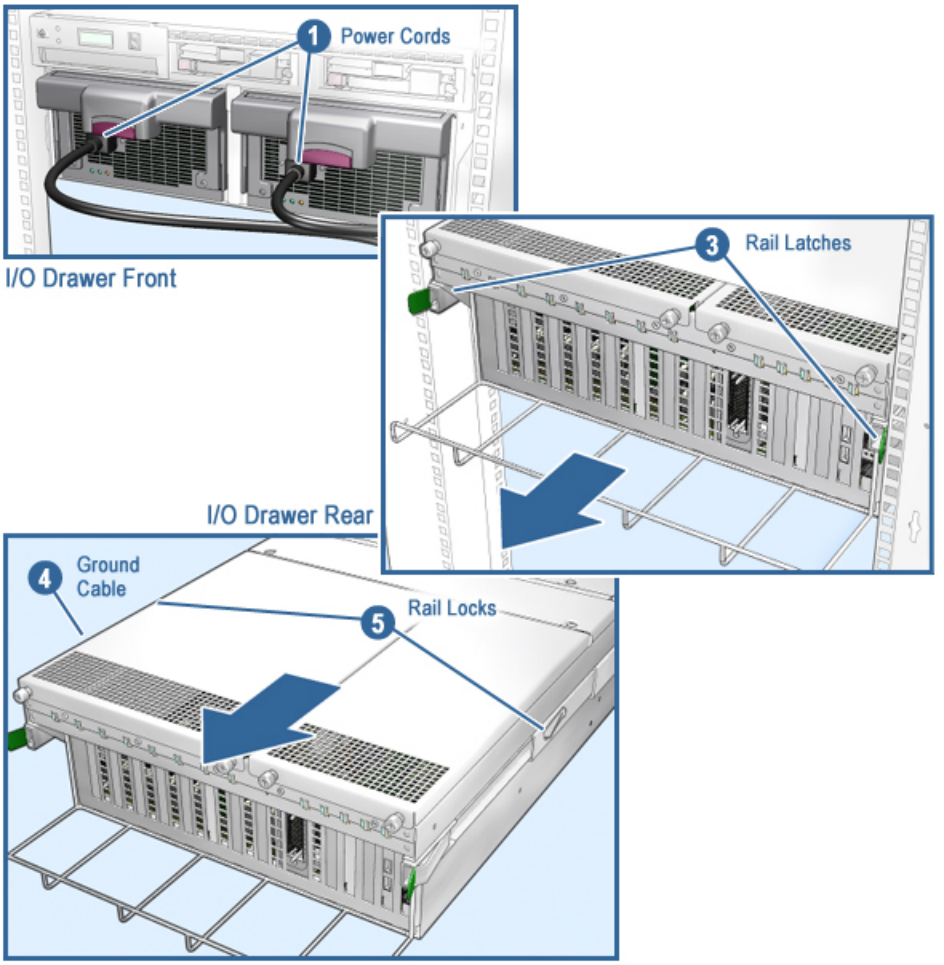
Remove the Rails

3. At the front of the cabinet, remove the two screws at the end of each rail. Remove the screw on the side of each rail near the front. Save all hardware.
4. At the rear of the cabinet remove the two square nuts and washers at the end of each rail. Remove the screw on the side of each rail near the rear. Take the rails out of the cabinet and set them aside.
5. Remove the rail brackets by removing the screw from each with a 5/16 socket and set them aside.

5.9.2 I/O Drawer Removal

Remove all PCI drawers from the old power cabinet.

Figure 5–15 Removing a PCI Drawer



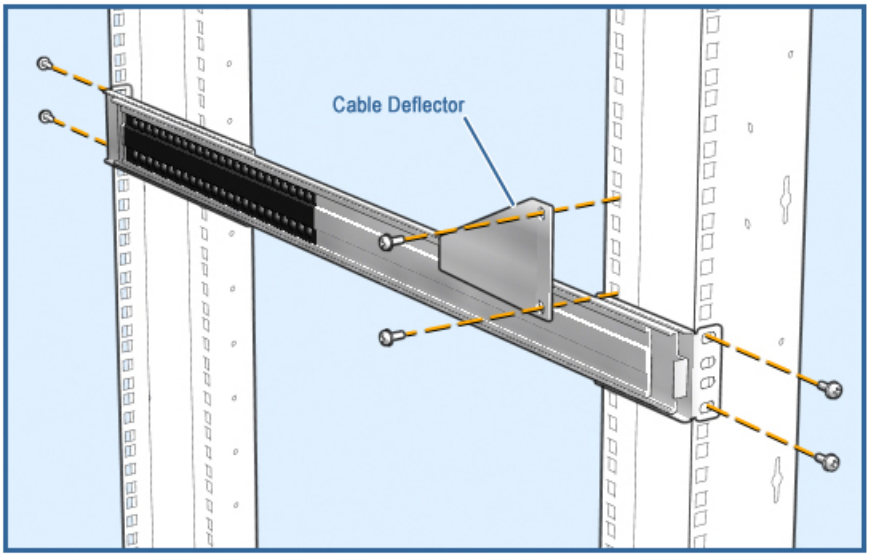
1. From the front of the cabinet, unplug the power cords (see Figure 5–15).
2. Remove the power supplies. Press the button on each handle and push the handle down. Slide each power supply out of the I/O drawer.
3. Release the two rail latches at the rear of the drawer that hold it in place and pull the drawer out until it locks.
4. Disconnect the ground strap from the right rear cabinet rail. Save the self-tapping screw.
5. Release the mounting rail locks and slide the I/O drawer out the rear of the cabinet.

Two people are needed to remove a PCI drawer.

5.9.3 Remove the PCI Drawer Slide Rails

Remove the slide rails for the PCI drawers just removed and set them aside.

Figure 5–16 I/O Drawer Slide Rails

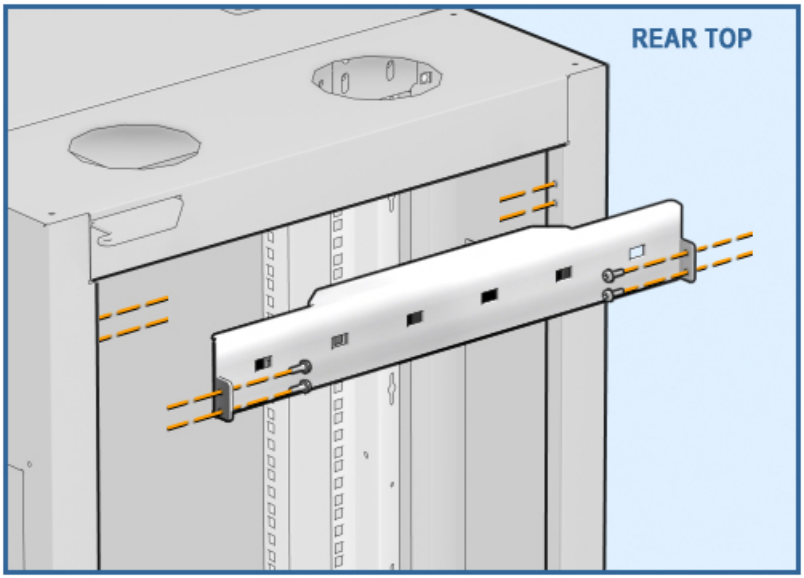


1. From the rear of the cabinet, remove the two screws from the end of each rail (see Figure 5–16). Save all hardware.
2. From the front of the cabinet, remove the two screws from the end of each rail. Set the slide rails aside.
3. Remove the cable deflector from the right front rail by removing the two screws. Set the cable deflector aside.
4. Remove and save all cage nuts.

5.9.4 Remove and Reinstall the Top Cable Support Assembly

Remove the cable support assembly at the top rear of the old power cabinet and reinstall it in the Dual AC power cabinet.

Figure 5–17 Cable Support Assembly



1. Remove the cable support assembly at the top rear of the old power cabinet and reinstall it in the same position in the Dual AC power cabinet. See Figure 5–17.

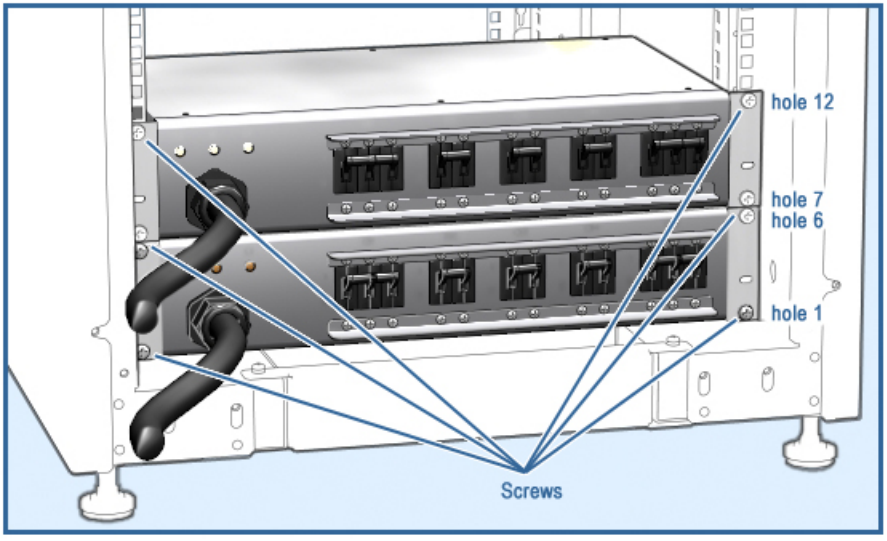
5.10 Install the I/O Drawers in the Dual AC Power Cabinet and Expansion Cabinet, if necessary.

In a 64P configuration, all PCI and storage drawers that were in the old power cabinets may not fit in the Dual AC power cabinet. If they do not, you will need to create an expansion cabinet from (one of) the old power cabinets.

5.10.1 Prepare Expansion Cabinet, if Necessary

If you need an expansion cabinet to hold I/O from the old power cabinet(s), remove all I/O from the old power cabinet and leave or install two PDUs at the bottom of the cabinet.

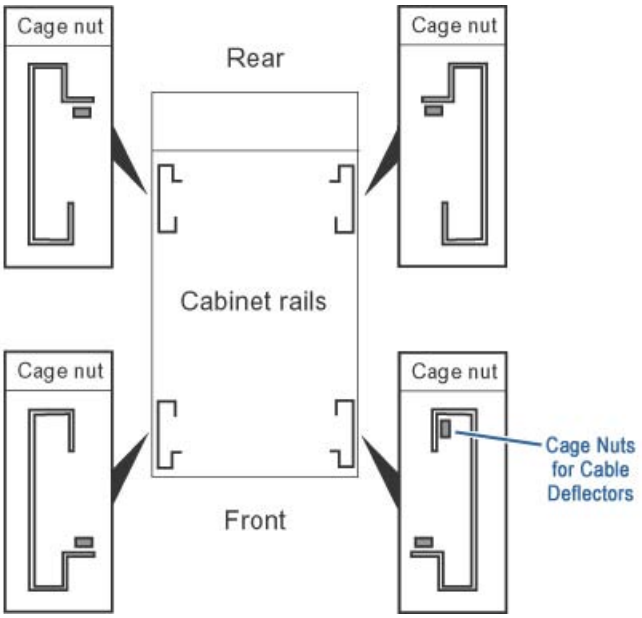
Figure 5–18 Place Two PDUs at Bottom of Expansion Cabinet (if necessary)



5.10.2 Install Cage Nuts and Cable Deflectors

1. Install cage nuts in the power cabinet (and expansion cabinet, if necessary) as shown in Figure 5–19. The illustration shows the section of the rail in which to install the cage nuts.
2. Attach the cable deflectors to the right front rail (see Figure 5–20).

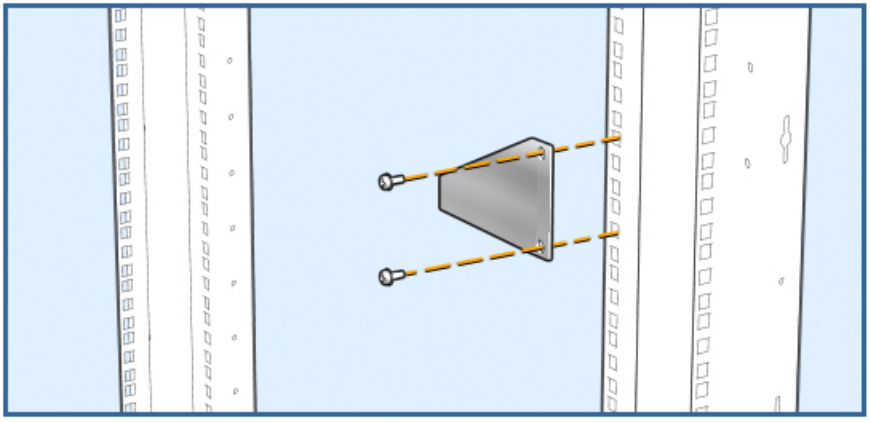
Figure 5–19 Cage Nuts for I/O Drawer Installation



Using the markings that you made on the cabinet rails to show the hole span of the PCI and I/O drawers that you need to install, install the cage nuts as follows:

Span for I/O drawers	Relative Cage Nut Position for Slide (Front Rails)	Relative Cage Nut Position for Slide (Rear Rails)	Relative Cage Nut positions for Cable Deflector
PCI drawer 1 – 12 (bottom to top)	2, 5	2, 5	5, 9
Storage drawer 1 – 9 (bottom to top)	4, 6	1, 3	N/A

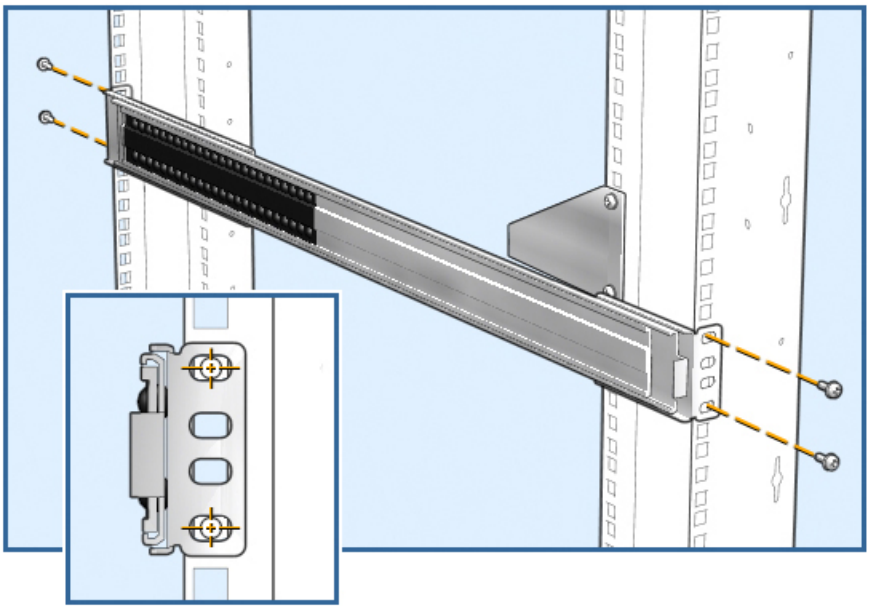
Figure 5–20 Cable Deflector



5.10.3 Install the Slides

Install the slides for the I/O drawers in the Dual AC power cabinet (and expansion cabinet, if necessary).

Figure 5–21 Installing the I/O Drawer Slides



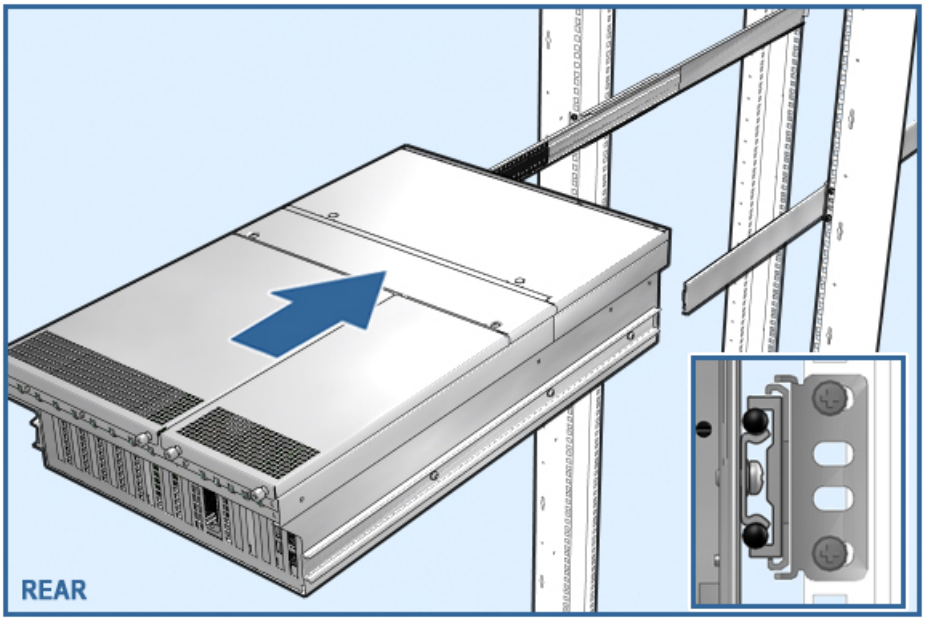
For each I/O drawer to be installed in the Dual AC power cabinet, mount the slides so that the space between them is slightly less than the width of the drawer.

1. Align one slide by centering the holes at both ends over the cage nuts in holes in the front and rear rails (see Figure 5–21). Attach the slide to the rails with 2 M6 screws at each end. Tighten the screws to secure the slide.
2. Align and attach the other slide, but do not tighten the screws. This allows for horizontal alignment during installation of the I/O drawer.

5.10.4 Install the I/O Drawers

Install the I/O drawers in the Dual AC power cabinet.

Figure 5–22 Aligning the I/O Drawer and Rail Slides



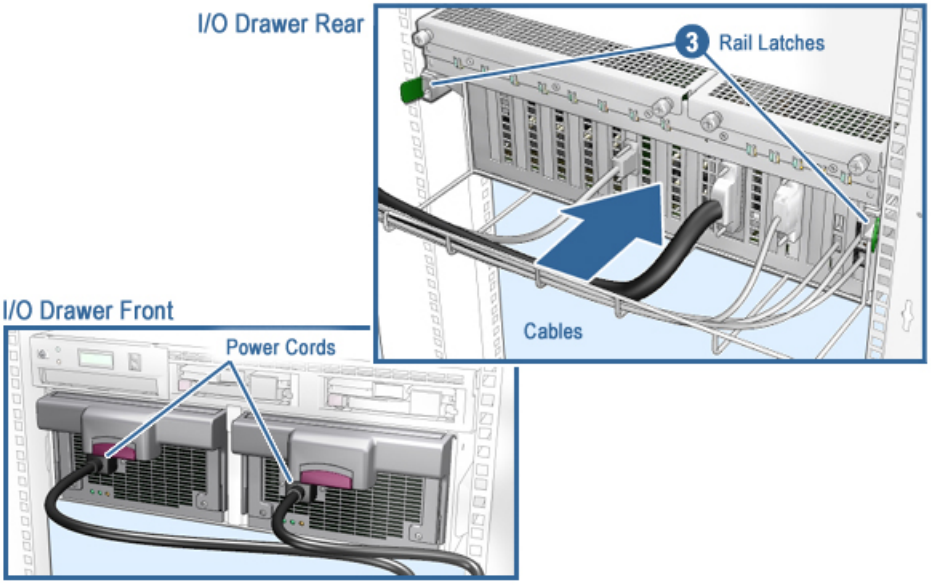
1. Check that no cables are in the way. If necessary, dress any cables that might interfere with installation of the I/O drawer.
2. At the rear of the cabinet pull the slides out. Align the slides with the drawer (see Figure 5–22) and place the drawer on them. The slides must be straight and vertical when the drawer is engaged.

NOTE: Failure to align the slides properly and to maintain the alignment as the drawer is installed can result in damage to the bearings.

3. Push the drawer into the cabinet until the slides and latches are fully engaged (see Figure 5–23).
4. Tighten the screws of the slide that was installed in step 2 of Section 5.10.3. This secures the slide in its final mounted position.

5. Connect the ground strap to the ground rail with the self-tapping screw.
6. At the front of the cabinet slide the power supplies in place. Push them in until they lock.
7. Replace the cable support assembly that was moved or removed in step 1 of Section 5.10.2.
8. Connect the power cords and cables removed. Make sure that each PCI drawer is cabled to the same CPU/IO7 as it was originally.

Figure 5–23 Installing the I/O Drawer

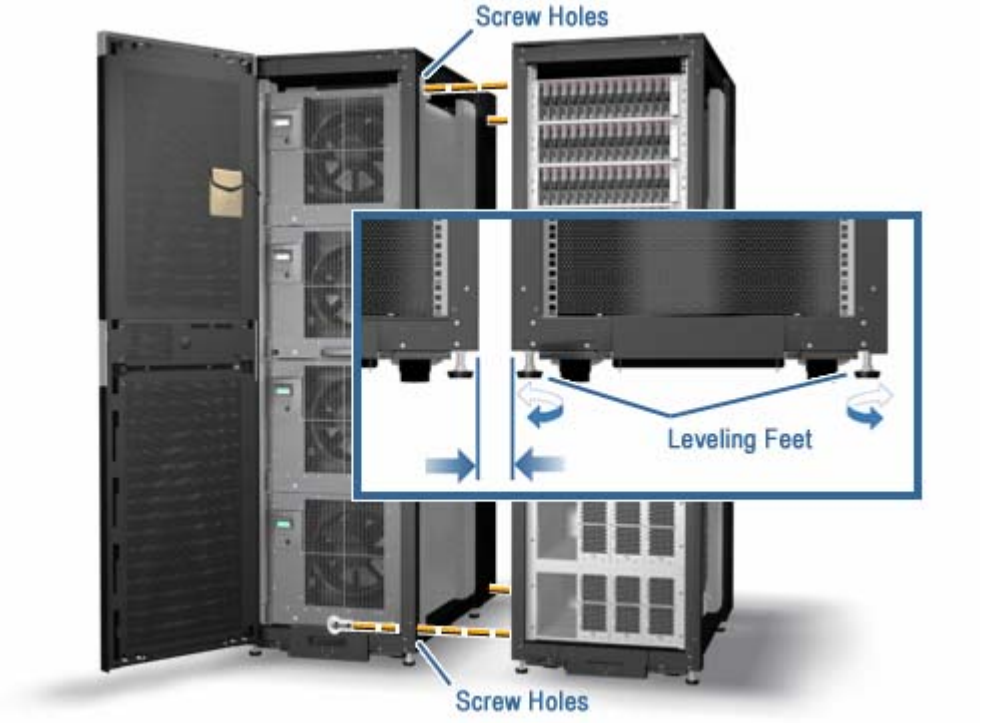


5.11 Install Dual AC Power Cabinet (and Expansion Cabinet, if necessary) in System

Wheel the Dual AC power cabinet into the system lineup where the rightmost old power cabinet was. If there is a new expansion cabinet, wheel it into the system lineup where the leftmost old power cabinet was. Otherwise move the new expansion cab to the leftmost or rightmost position in the system lineup and set its cabinet ID as appropriate.

Move the stabilizer feet until the cabinet is at the same level as the other cabinets. Screw the cabinets together and attach the grounding wire.

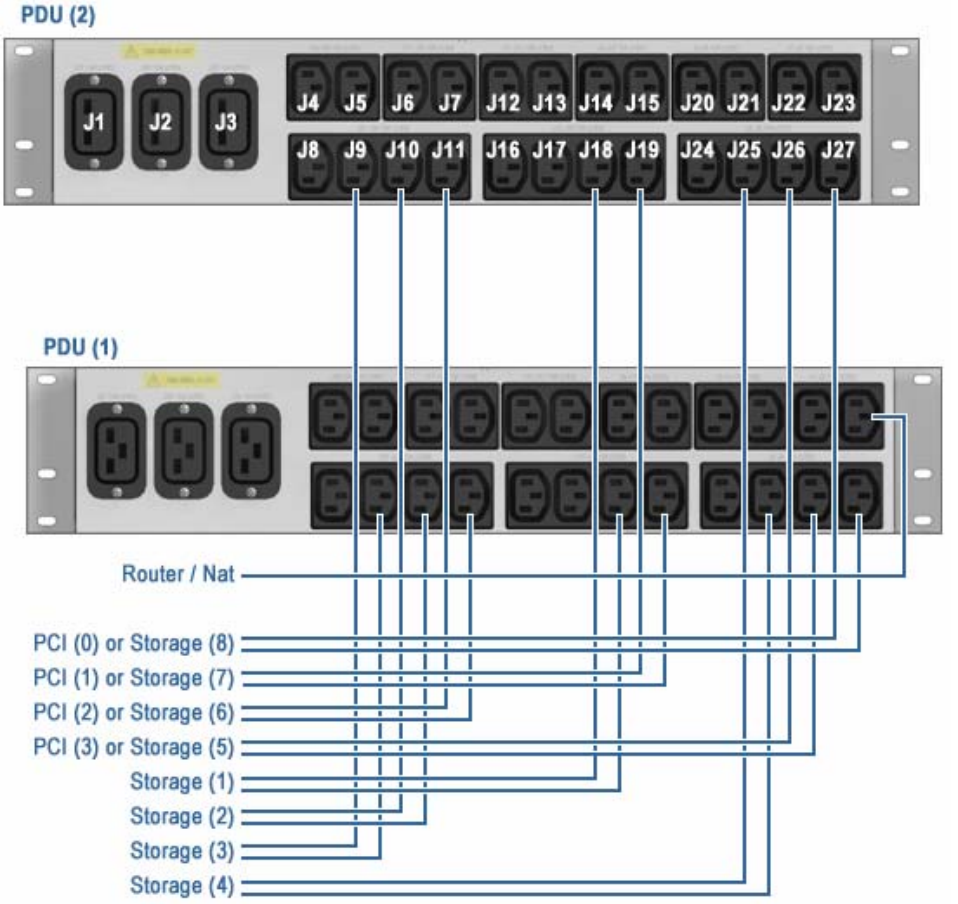
Figure 5–24 Installing the Dual AC Power Cabinet and Expansion Cabinet, if necessary, in the System



5.12 Recable Power Cables from I/O to the Two PDUs

To supply 48V power redundancy to the I/O in the new cabinets, attach the power cables to the circuits to both PDUs in the Dual AC power cabinet and expansion cabinet, if necessary.

Figure 5–25 Recable Power Cables from I/O to the PDUs



1. Recable any I/O drawers or connections from the system so that they can receive power from both the upper and lower PDU in the Dual AC power cabinet. An example of recabling to one PDU for part of a 64P system's I/O is shown in Figure 5–25.

5.13 Cable the 8P Drawers to the SDIs

Attach cables from each 8P drawer to the appropriate SDI in the Dual AC power cabinet.

Figure 5–26 SDI-to-8P Drawer Connections

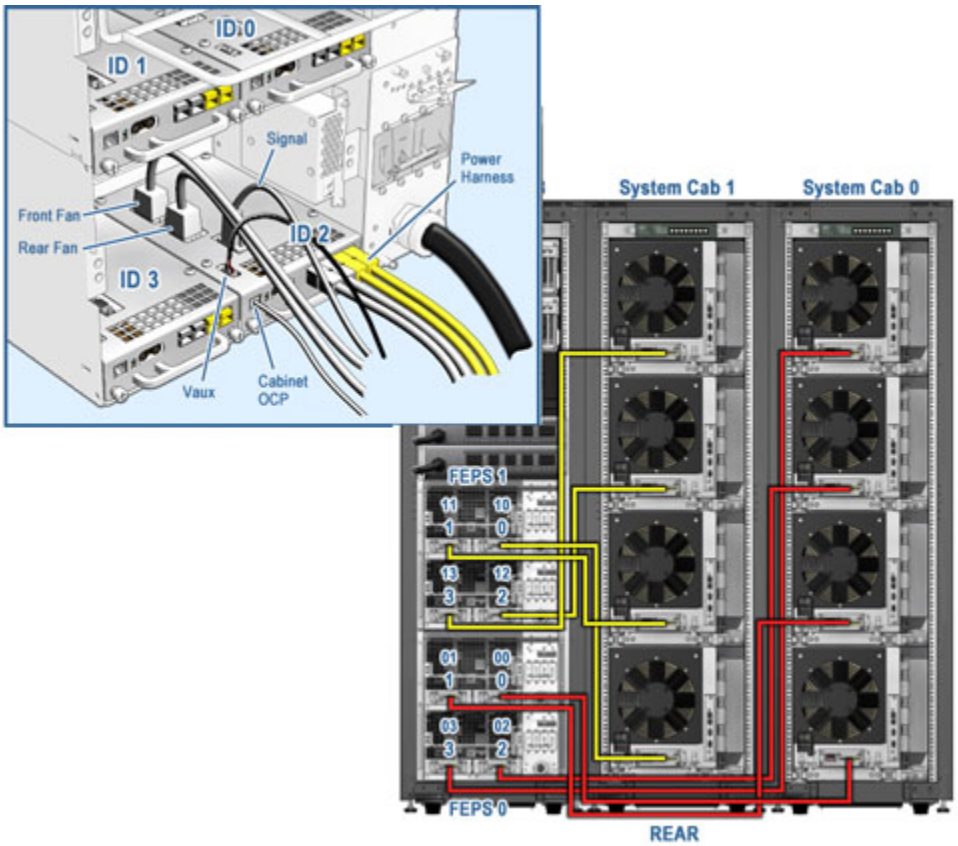


Figure 5–26 shows which SDI in FEPS 0 is connected to which 8P drawer in System Cab 0. Similar relationships apply to FEPS 1 and System Cab 1. The box in the upper left shows the specific cabling to the SDIs from an 8P drawer.

Locate the power and signal cables from the 8P drawers that were set aside at the rear of the system cabinets. Attach a label (part no. 36-60393-01) to each yellow and gray power harness (see Figure 5–26) according to Table 5-3.

Table 5-3 Cable Routing and Labeling

FEPS	SDI No.	System Cab ID	8P Drawer No.	Label
0	0	0	0	00
0	1	0	1	01
0	2	0	2	02
0	3	0	3	03
1	0	1	0	10
1	1	1	1	11
1	2	1	2	12
1	3	1	3	13

Repeat the following procedure for each SDI and 8P drawer.

1. Starting with lowest drawer, thread the power harness from the system cab along the lower channel at the rear of the cab and into the power cab.
2. With the drawers closed, prepare the target power SDI by first loosening its power retaining bracket.
3. Plug the power harness (yellow and gray) into the SDI (see Figure 5–26). Lift and tighten the power retaining bracket.
4. Plug the following into the SDI module (see Figure 5–26):

   Two-position Vaux power cord
   Two power cables to the fans
   MBM power signal interface cable
   Cabinet OCP cable

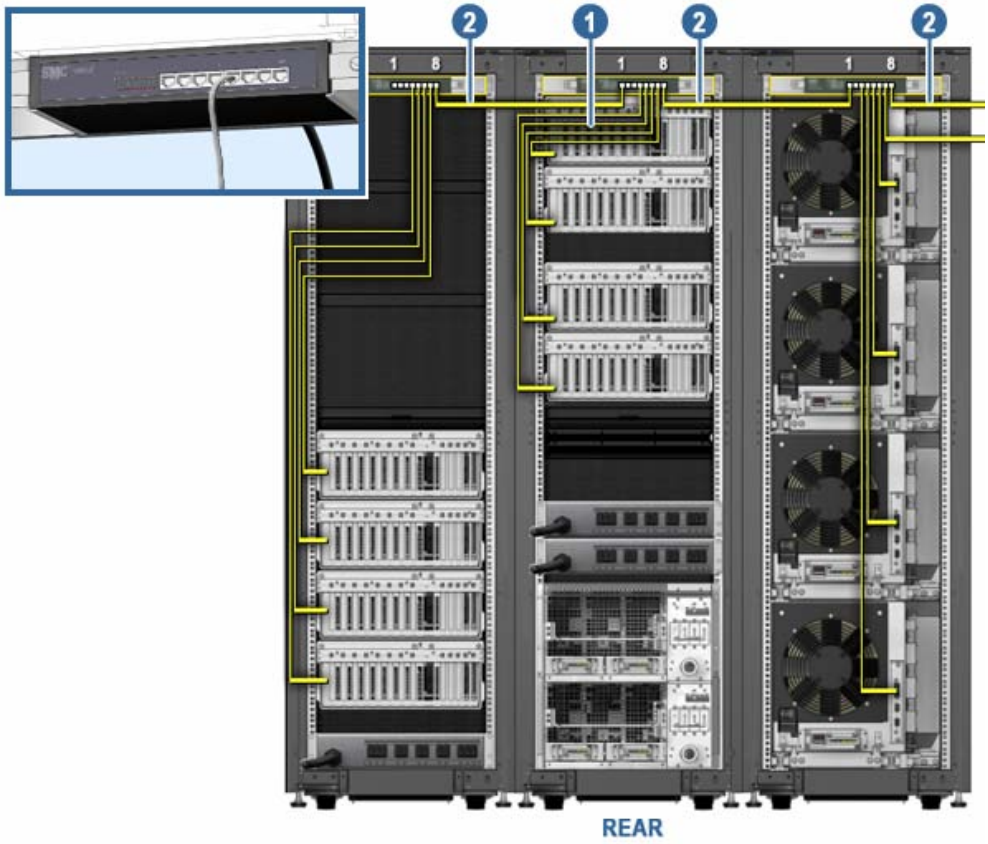
Repeat steps 2 through 4 for all drawers.

Stepping to the front of the system cabinet, pull the drawers out of the cabinet and make sure there is enough play in the power harnesses to allow the drawers to fully extend.

5.14 Connect the NAT Boxes

Connect the NAT box in the Dual AC power cabinet to the other cabinets.

Figure 5–27 Connecting the NAT Boxes



The I/O in the new Dual AC power cabinet must be located by server management software. This is accomplished through the internal LAN which consists, in part, of the microprocessors on the MBM and PBM modules. Thus, you must connect the PBM in each PCI drawer in the new power cabinet to the NAT box in that cabinet and then connecting Dual AC power cabinet's NAT box to the other NAT boxes in the system.

1. Seat both ends of all cables between the NAT box in the Dual AC power cabinet and all PCI drawers in the Dual AC power cabinet.
2. Using the 39-inch network cable (17–05097–01), make a single connection between the NAT box in the system cabinet and the Dual AC power cabinet, as shown in Figure 5–27. 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.

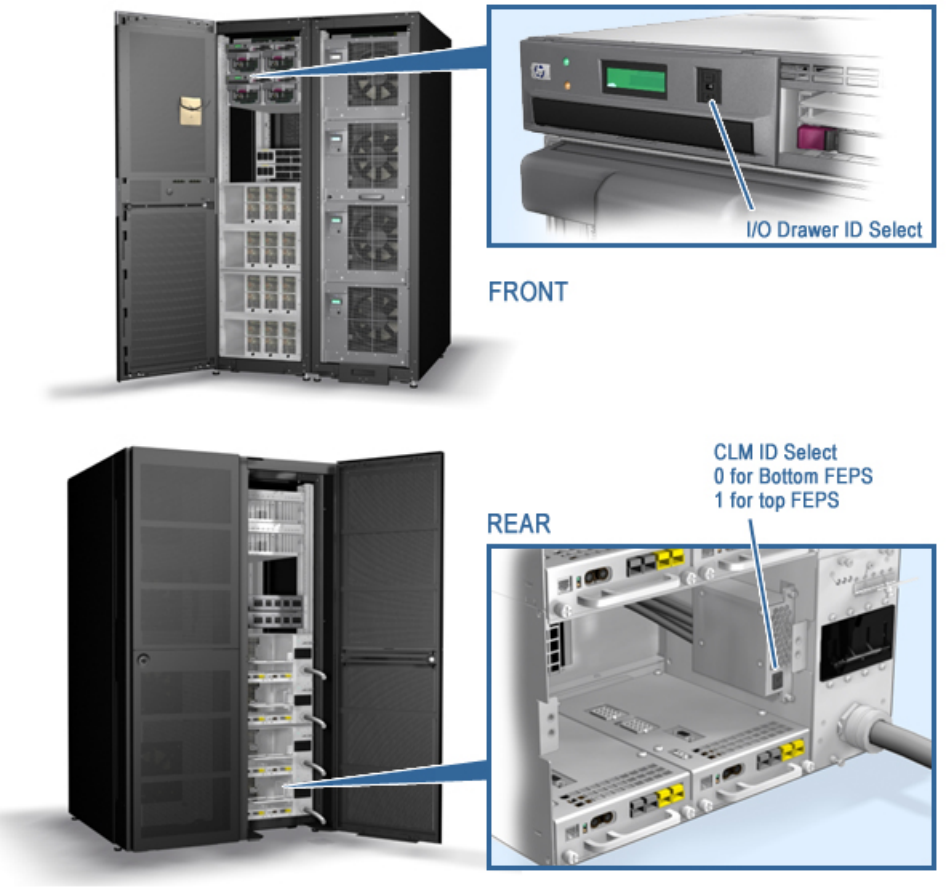
5.15 Set the ID Switches

Set the ID switch of the Dual AC power cabinet.

Figure 5–28 Dual AC Power Cabinet ID Switch

1. Set the ID switch of the Dual AC power cabinet to 3 (see Figure 5–28).
2. Leave the I/O drawer ID numbers as they were.
3. At the rear of the new power cabinet, check to see that the lower CLM ID is set to 0 and the upper CLM ID is set to 1 (see Figure 5–29).

Figure 5–29 Device ID Switches



5.16 Restore Power and Check LEDs

Plug the two 60-AMP AC power cables (see Section 5.2) from their chosen outlets to the FEPS. Also plug the 30-Amp power cables from the PDUs into their chosen outlets. Turn on the breaker switches on all the PDUs. Turn on the 3-position system cabinet OCP switch to "On: (1). All LEDs should light green.

Figure 5–30 Restore Power at System Cabinet OCP

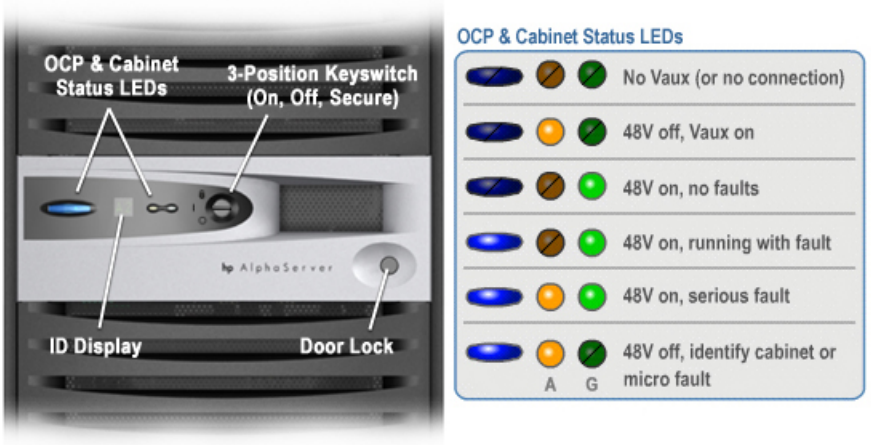


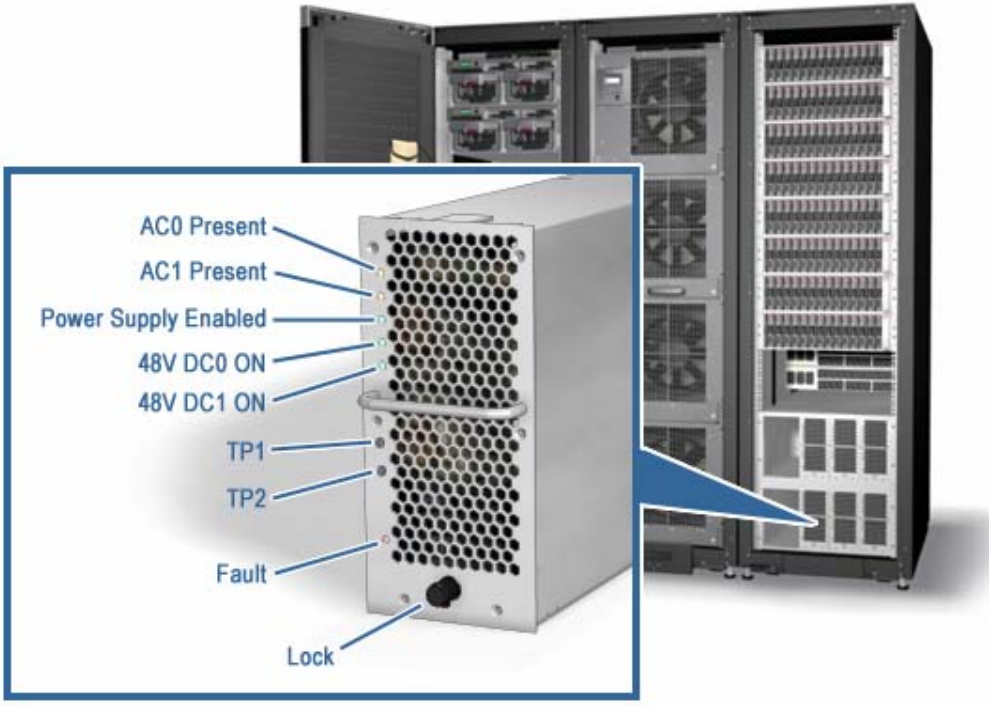
Table 5-4 OCP LED Table[1]

Blue LED	Amber LED	Green LED	Indication
Off	Off	Off	No Vaux (or no connection)
Off	On	Off	Vaux on, bulk power off
Off	Off	On	Bulk power on, no errors
On	Off	On	Bulk power on, running with fault
On	On	On	Bulk power on, serious fault
On	On	Off	Bulk power on, identify cabinet or micro fault

[1] The left LED is blue, the middle LED is amber, and the right LED is green.

1. Plug in the power cords from the two PDUs to the power outlets chosen for them.
2. Turn on the breaker switches on the two PDUs.
3. Turn the three-position keyswitch on the front main cabinet door to “On” (1). See Figure 5–30.
4. All of the LEDs should light green. If they do not, check other LEDs on the system to locate the component in error. For example, see Figure 5–31. If you cannot find a failed component, return to Section 5.5 and remove power from the system. Check to make sure that all cable connections are secure.
5. Once LEDs are on, reconfigure the system (see Section 5.17).

Figure 5–31 LEDs on Dual AC Power Supplies



5.17 Reconfigure and Verify the System

If you moved I/O to a different cabinet number (needed to put I/O from old power cabinet(s) in an expansion cabinet), or if you had two power cabinets and reinstalled only one, changing cabinet numbers in the system lineup, you need to let the firmware determine the new configuration.

At the MBM prompt, enter this command:

```
MBM> set membership auto
```

5.17.1 Check SDI/8P Box Configuration After Power-Up

After you power up your system for the first time, check to see that the SDI and 8P box cabling meets the configuration rules described in Section 5.13. If the SDIs are miscabled, the system may power up, but problems could occur later in hard-partitioned platforms.

Below is a sample of the Power-Sub-systems configuration from an

mbm> show system

command on a 64P system. If all SDIs are connected to the proper 8P boxes, and the two cabinet OCP cables are connected to SDI 0 and 2, then the power mapping will show all SBBs in sequential their order and the cab ID will be the same for all SDI modules.

```
SBB Power Sub-systems:
  Cab Drw  Type  WPI/SDI  Power Supply  Powered SBB
                   0123   0123456789AB   SBB(cab,drw)
   2   0    SDI    p...   pppppp......   SBB( 0,0 )
   2   0    SDI    .p..   pppppp......   SBB( 0,1 )
   2   0    SDI    ..p.   pppppp......   SBB( 0,2 )
   2   0    SDI    ...p   pppppp......   SBB( 0,3 )
   2   1    SDI    p...   pppppp......   SBB( 1,0 )
   2   1    SDI    .p..   pppppp......   SBB( 1,1 )
   2   1    SDI    ..p.   pppppp......   SBB( 1,2 )
   2   1    SDI    ...p   pppppp......   SBB( 1,3 )
```

The following is an example of a miscabled system, in which the 8P box cabling for SDI 3 and SDI 2 were swapped. Also, the cabinet OCP cable was plugged into SDI slot 3, instead of SDI 2. Below is the relevant section of the Power-Sub-systems configuration in an

mbm> show system

command.

Notice that the SBBs are not reported in sequential order and SBB 0,3 is reported as being in a different cab.

```
SBB Power Sub-systems:
  Cab Drw  Type  WPI/SDI  Power Supply  Powered SBB
                   0123   0123456789AB   SBB(cab,drw)
   0   0    SDI    ...P   PPPPPP......   SBB( 0,3 )
   1   0    SDI    P...   PPPPPP......   SBB( 0,0 )
   1   0    SDI    .P..   PPPPPP......   SBB( 0,1 )
   1   0    SDI    ..P.   PPPPPP......   SBB( 0,2 )
```

Once the system has powered up and you have checked the SDI cabling as described above, proceed to Chapter 6 to run the QVET program.

Chapter 6
Verify with Q-Vet

Use Q-Vet to verify your newly upgraded system. The following topics are covered here:

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

6.1 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. Q-Vet is used for system installation verification and during system development by HP engineers.*

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/.

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.***

IVP 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.

6.1.1 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.

6.2 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.

6.2.1 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.`**

6.2.2 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. We recommend but do not require 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, 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.
7. On reboot you can start Q-Vet GUI via **`$`**vet **or the command interface via $vet/int=char**.

6.3 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://cisweb.mro.cpqcorp.net/projects/qvet/ before running Q-Vet. Follow the instructions listed for your operating system to run Q-Vet in each partition.

6.3.1 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

```
> 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.

6.3.2 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.

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", 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.

6.4 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.

6.5 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.

6.5.1 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`**.
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.)

6.5.2 OpenVMS

1. Command Q-Vet to **Stop, Terminate, and Exit.**
2. Execute the command **@sys$manager:qvet_uninstall.** This will remove Q-Vet and restore system tuning (**modparams.dat**) and the original **UAF** settings.
3. Note: log files are retained in **sys$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.)

6.5.3 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