

**HP 9000 D Class Enterprise Servers**

**Installation Guide**

**for HP A3764A and HP A3765A Cabinets**



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## Printing History

The manual printing date and part number indicate its current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date.

Manual updates may be issued between editions to correct errors or document product changes. To ensure that you receive the updated or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

First Edition: ..... September, 1997

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## Safety

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. The following defines the **WARNING** and the **Caution** statements contained in this manual.

---

**WARNING**     **The WARNING sign denotes a hazard. It calls attention to a procedure, practice, of the like, which if not done correctly or adhered to, could result in injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.**

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**CAUTION**     The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, of the like, which if not done correctly or adhered to, could damage or destroy part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

---

### Safety and Regulatory Information

For your protection, this product has been tested for conformance to various national and international regulations and standards. The scope of this regulatory testing includes electrical and mechanical safety, electromagnetic emissions, immunity, ESD, acoustics and hazardous materials.

Where required, certifications are obtained from third party test agencies. Certification marks appear on the product label. In addition, various regulatory bodies require some information under the headings noted below.

#### Acoustics - (Germany)

Laermangabe (Schalldruckpegel LpA) gemessen an Arbeitsplatz bei normalem Betrieb nach DIN 45635, Teil 19: Acoustic Noise (A-weighted Sound Pressure Level LpA) measured at operator's position, normal operation, to ISO7779.

A3764A cabinets: 49.8 dB (LpA)

#### Safety Warnings:

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**WARNING**     **This product has not been evaluated for connection to an IT power system (an ac distribution system having no direct connection to earth according to IEC 950).**

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## LEAKAGE CURRENT:

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**WARNING** Due to the types of products able to be installed in this product there is a risk of high leakage current (>3.5 mA). Reliable ground circuit continuity is vital for safe operation of this product. To reduce the risk of electric shock, earth connection is essential before connecting the supply. Never operate product with the ground conductor disconnected.

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## POWER LIMITATIONS:

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**WARNING** **IMPORTANT SAFETY NOTE FOR INSTALLATION**

**For installing cabinets containing switchless Power Distribution Units (PDU part numbers C2785-63004, C2786-63008, C2786-63009 or C2786-63010):**

**The socket outlet shall be installed near the rack cabinet and shall be easily accessible, because the plug on the power supply cord is intended to serve as the disconnect device for this cabinet.**

**The Total output current rating of the PDU equals the output current rating of the UPS receptacle to which the PDU is connected (up to 16 Amps maximum). Check the total input current ratings of the equipment installed in the cabinet to avoid overloading the UPS.**

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**WARNING** **IMPORTANT SAFETY NOTE FOR INSTALLATION**

**For installing dual-voltage-range-rated Power Distribution Units (PDU part numbers C2785-63004 or C2786-63008) for connection to an Uninterruptable Power Supply (UPS):**

**The voltage of the PDU receptacles equals the voltage of the UPS receptacle to which the PDU is connected (200-240V range). CHECK THE UPS OUTPUT VOLTAGE BEFORE CONNECTING ANY EQUIPMENT TO THE PDU! Failure to check the voltage could lead to severe equipment damage.**

---

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**CAUTION** To reduce the risk of overload, do not load any single PDU with more than a maximum of 16 Amperes. In addition, do not load a single NEMA 5-15 receptacle with more than 15 Amperes and any single IEC 320 receptacle with more than 10 Amperes.

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## ACCESSORIES:

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**CAUTION** This product has been designed to be used with specific electrical accessories (i.e. PDU's). The use of any other accessory is not recommended or supported.

---

## **Preface**

This edition of the *Cabinet Installation Guide* contains technical information about integrated HP A3764A and HP A3765A rack-mount cabinets. These cabinets are designed to accept HP 9000 D Class Enterprise servers. At the time of publication, this family of computers included the following models:

### **HP 9000 Model:**

**D2xx**

**D3xx**



# 1 Introduction

---

The HP 9000 D2xx and D3xx Class Enterprise servers can be mounted into a cabinet to consolidate the pieces of the core system. The cabinet is available in a 1.6 meter (63.8 inches) size. The cabinet is offered as a factory integrated cabinet (A3764A) with one to four D Class computers mounted, or a field integrated (A3765A) cabinet with no computers mounted by the factory. Both cabinets have a usable depth of 0.905 meter (35.6 inches). The cabinets have mounting columns that comply with EIA standard 23 inch mounting flanges.

---

## Inspecting the Shipment

When the shipment arrives, make sure the cabinet has been received as specified by the carrier's bill of lading. Inspect the shipping container for evidence of mishandling during transit. If the container is damaged or water-stained, ask that the carrier's agent be present when the cabinet is unpacked. Refer to the instructions described in the *Claims Procedure* section. If everything appears to be in satisfactory condition, proceed with the unpacking instructions.

---

NOTE	Do not discard or destroy the shipping container or the packaging material. If it becomes necessary to repackage the cabinet, these items will be needed. HP also suggests that you keep this manual, in case you later have to repackage the cabinet for shipment.
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## Claims Procedure

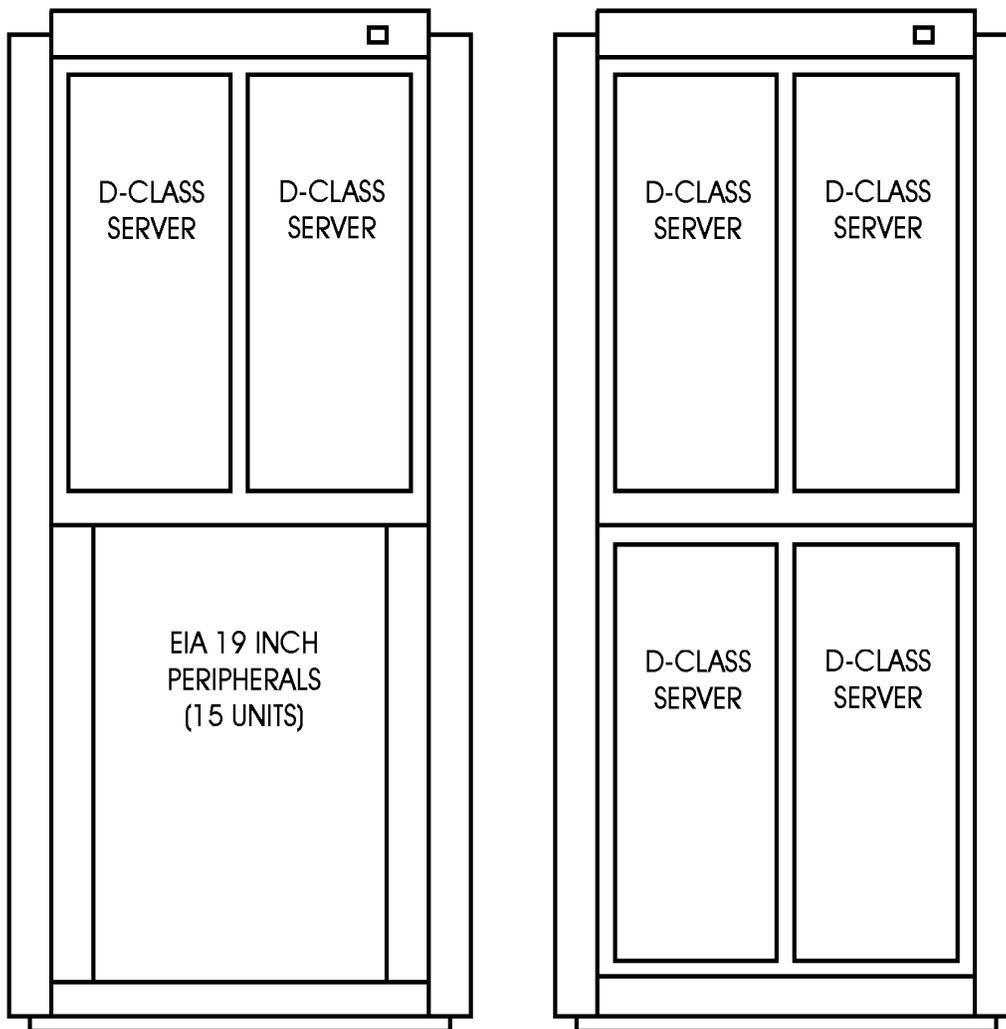
If the shipment is incomplete or if the equipment is damaged or fails to meet specifications, notify the nearest Hewlett-Packard Sales and Support Office. If damage occurred in transit, notify the carrier as well. Hewlett-Packard will arrange for replacement or repair without waiting for settlement of claims against the carrier. If the shipment was damaged in transit, keep the shipping containers and packaging material for inspection.

---

## Cabinet Configurations

Although the cabinets are designed to accommodate a variety of components mounted in just about any configuration, there are some basic rules that apply to mounting a computer system. These rules allow for weight distribution, accessibility of the components, and cable management inside the rack-mount cabinet. Figure 1-1 shows the available configurations.

**Figure 1-1 Cabinet Configuration Examples**



qlsp001

## Required Tools

Before beginning the installation process, make sure you have the necessary tools.

1. Standard hand tools (including Torx-drive set and voltmeter).
2. Flat-blade screwdriver, 3/16-inch by 9 inches long.
3. Open-ended 9/16-inch wrench.

---

## Installation Site Requirements

Before proceeding with the installation of the A3764A or A3765A rack mount cabinet, ensure that all the procedures and requirements listed in the *Site Preparation Guide* (A3764-90005) have been completed. If all requirements and procedures have not been completed, do not proceed with the installation procedures listed in this document.

Refer to the *Site Preparation Guide* to establish responsibility for the task that needs to be complete in order to proceed with the installation. Be sure to inform the customer of the situation to facilitate understanding and completion of the task or requirement.



## 2 Unpacking and Installation

---

This chapter describes how to unpack the A3764A or A3765A cabinet assembly. Both cabinets are shipped on a pallet. The instructions for unpacking are the same for both the A3764A and A3765A cabinet.

It is the customer's responsibility to inspect the shipping package for shipping damage. It is not the customer's responsibility to remove the cabinet assembly from the shipping pallet.

---

**NOTE** Do not discard or destroy the shipping container or the packaging material. If it becomes necessary to repackage the cabinet, these items will be needed. HP also suggests that you keep this manual, in case you later have to repackage the cabinet for shipment.

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### Unpacking the Cabinet Assembly

All cabinet types are packaged the same way. Be sure to read the unpacking instructions before proceeding.

---

**WARNING** A fully configured 1.6 meter cabinet (A1897A) can weight up to approximately 441 kg (980 lbs). Be very careful when unpacking the cabinet.

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To unpack an A series cabinet, perform the following steps:

1. Cut the plastic polystrap bands around the shipping container.

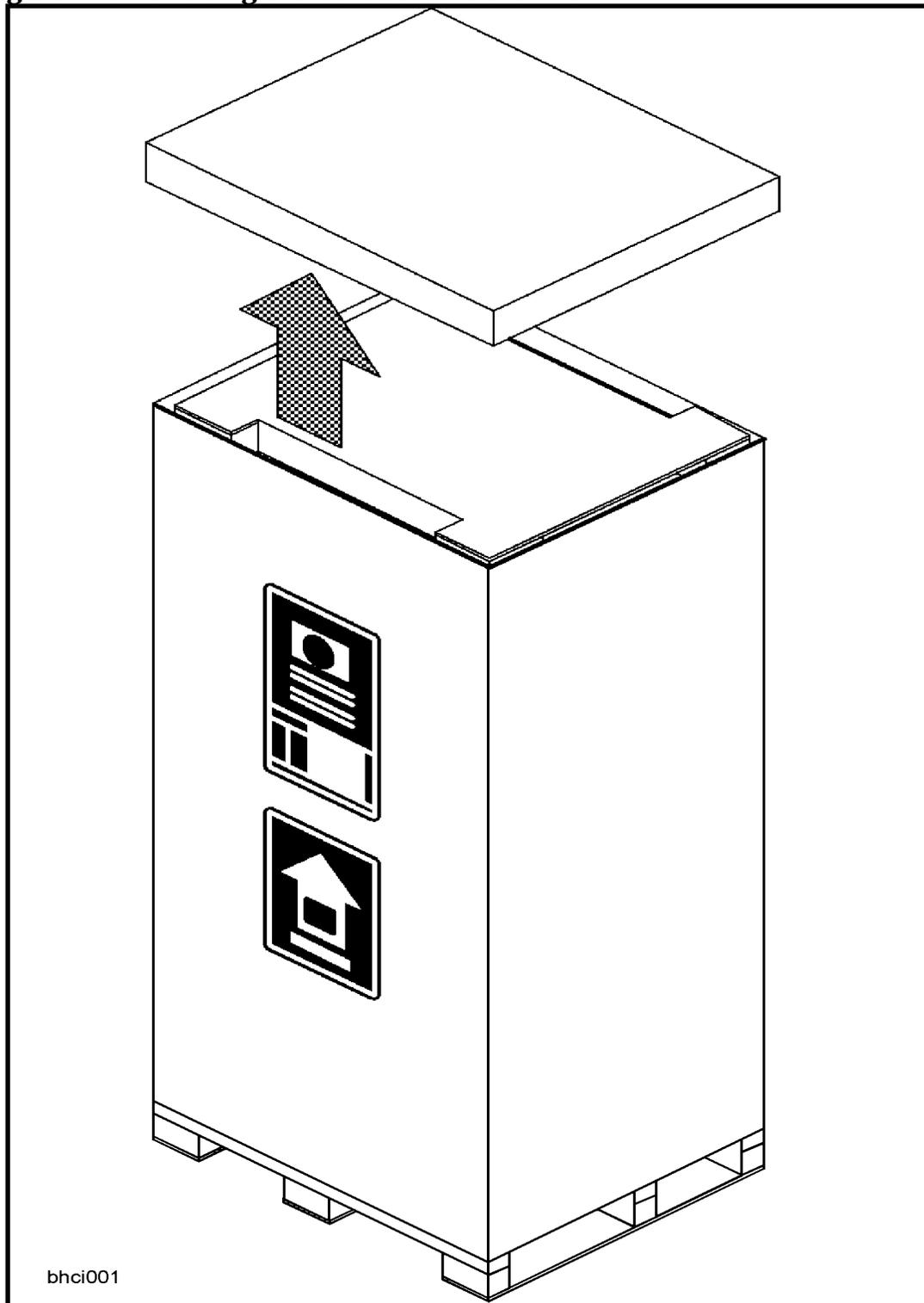
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**WARNING** Wear protective glasses while cutting the plastic bands around the shipping container. These bands are under tension. When cut, they can spring back and cause serious eye injury.

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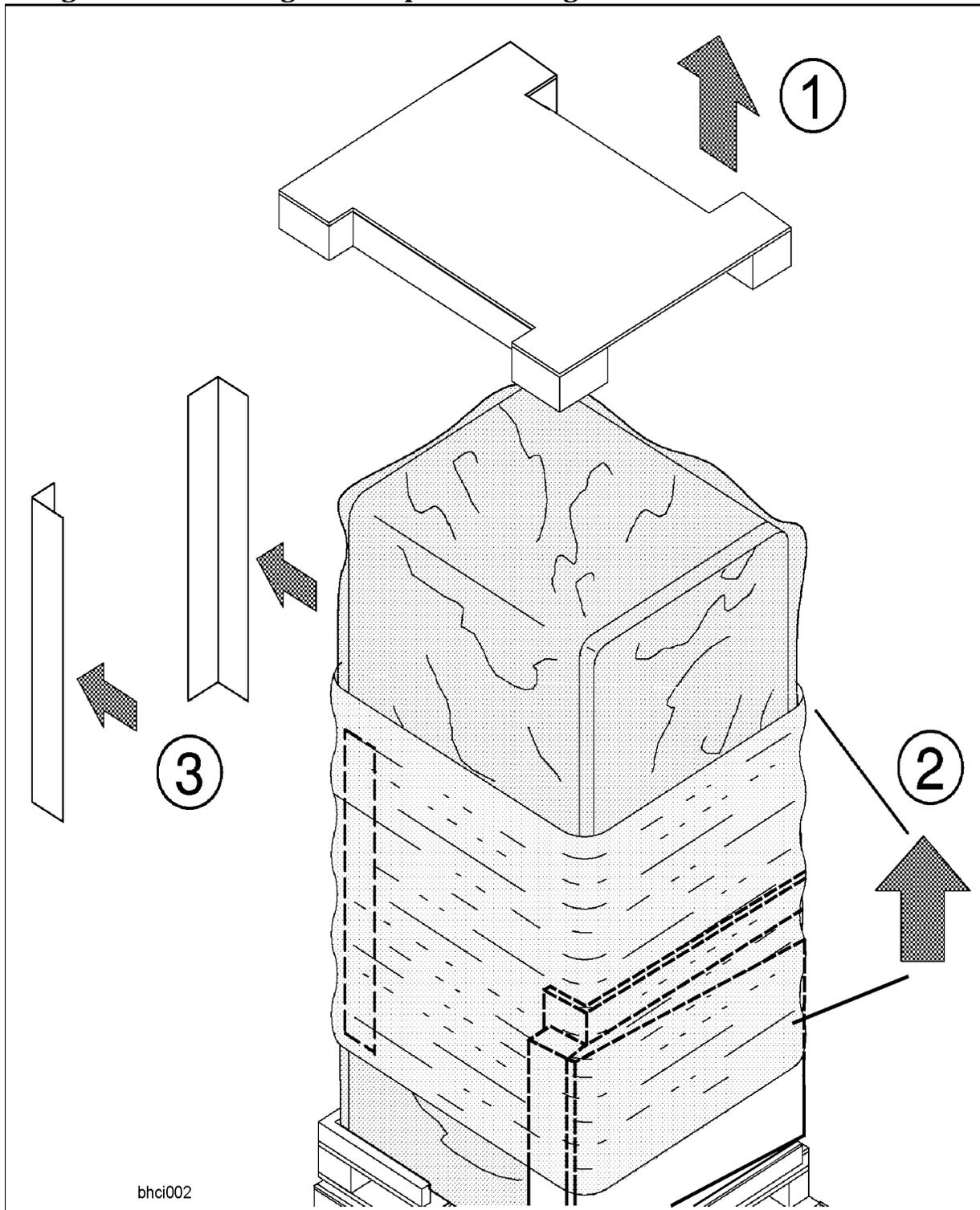
2. Lift the cardboard top cap off of the shipping box. See Figure 2-1.

**Figure 2-1. Removing the Cardboard Container**



3. Remove the clam shell box from the pallet.
4. Remove the packing material (1) from the top of the cabinet. See Figure 2-2.

**Figure 2-2. Removing the Ramp and Packing Material**

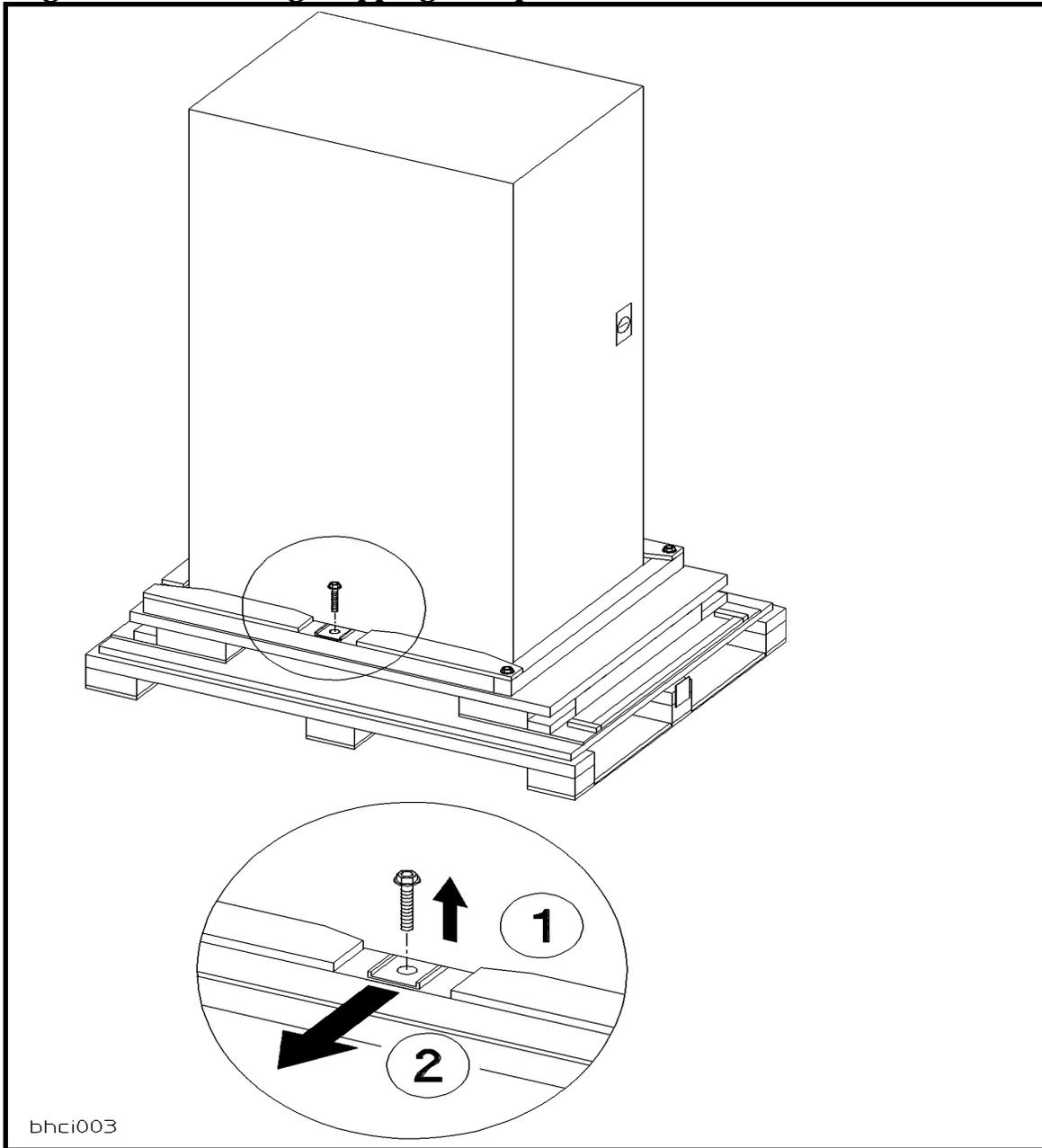


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5. Remove the shrink wrap (2) from around the cabinet. This also holds the bezel protective packing (3) on the front corners of the cabinet. Remove the bezel corner packing. See Figure 2-2.

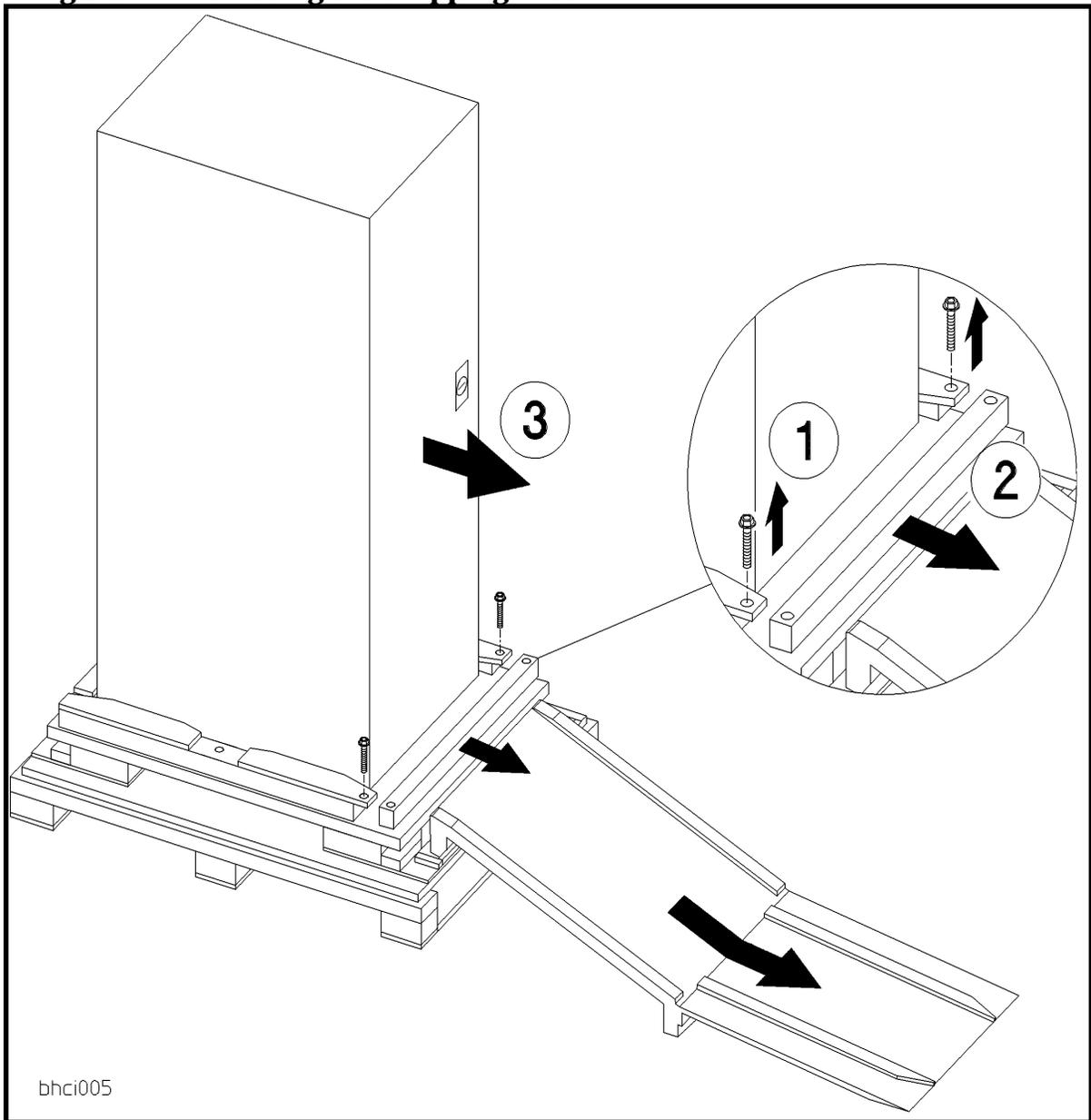
6. Remove the two (one each side) shipping clamps from the bottom of the frame. They are bolted to the pallet, remove the bolt (1) and then remove the clamp (2). See Figure 2-3.

**Figure 2-3. Removing Shipping Clamp**



7. Remove the two bolts (1), one on each corner, and pull the block (2) out from under the cabinet. See Figure 2-4.

**Figure 2-4. Removing the Shipping Block**



8. Position the ramp so that the block of wood under the ramp locks into the edge of the pallet with the strip of wood forming a lip. This holds the ramp in place while the cabinet is moved across the pallet and down the ramp. See Figure 2-4.

9. Raise the cabinet leveling feet to their highest position.

---

**WARNING** Make sure that the leveling feet on the cabinet are raised before you roll the cabinet down the ramp. If the leveling feet are not raised, they can catch on the ramp and cause the cabinet to tip over.

---

10. Carefully roll the cabinet (3) down the ramp, as shown in Figure 2-4.

## Cabinet Inspection

Once the cabinet is off the shipping pallet, and before it is placed in the installation site, inspect the internal and external condition of the cabinet.

### **Exterior:**

Check the cabinet exterior for signs of shipping damage:

1. Look at the top and sides for dents, warpage, or scratches.
2. Check the front bezels for alignment, scratches, and that they open and close normally.
3. Check any filler panels on the front of the cabinet, for proper fit.
4. Check the forehead assembly for any signs of damage.
5. Check the rear door for dents, scratches, proper fit, and operation. Also visually inspect the fit of the door when it is closed.

**Interior:** Open the rear door and inspect the inside of the cabinet.

1. Inspect all cables, make sure they are secure.
2. Inspect all rails for signs of damage.
3. Check all mounting screws for tightness.
4. Check all components for signs of shifting during shipment or any signs of damage.

If any damage is found, follow the claims procedures described in Chapter 1. Some damage may be repaired by replacing a damaged part, if that part is replaceable. Refer to Chapter 5 for a list of field replaceable parts for the cabinet. For internal component damage, refer to the *Service Manual* for replaceable parts and procedures.

If extensive damage is found, it may be necessary to return the entire cabinet to HP. Refer to the Repacking instructions listed in this chapter.

---

## Cabinet Installation

The installation of the pre-loaded cabinets consist of the following steps:

1. Move the cabinet to installation site.
2. Lower the leveling feet. (This will prevent excessive wear on the casters.)
3. Connect the system console to the server.
4. Connect all user terminals to the server.
5. Connect all system peripherals to the server.

---

**NOTE** Attaching cables while the rails are extended fully forward will ensure sufficient slack for later maintenance.

---

6. Connect the cabinet power cord to the appropriate wall outlet.

---

**NOTE** If the cabinet being installed contains a PowerTrust UPS option, perform the steps under *PowerTrust UPS Option*.

---

7. Be sure all peripherals outside the cabinet are connected to wall outlets.

The cabinet/server system assembly is now ready for the power up process. Refer to Chapter 4 for operating instructions.

## PowerTrust UPS Option

Unpack the PowerTrust UPS and read all the installation information in the *PowerTrust System Guide* part number 5961-8383. Once all the procedures listed in the UPS guide are complete, perform the following steps to complete the UPS installation with the cabinet.

1. Position the UPS next to the cabinet on the floor.
2. Remove the jumper cord from the SPU to the PDU inside the cabinet.
3. Install one of the convenience cords (output cord) that came with the UPS into the AC receptacle in the back of the SPU.
4. Place the other end of that cord into one of the *Output* outlets in the back of the UPS.
5. The other convenience cord is connected between the UPS and the system console.
6. Locate the appropriate input line cord for the UPS in the supplemental package shipped with the UPS.
7. Plug the UPS into the appropriate wall outlet.
8. The system should now be ready for power up.

## Repackaging the Cabinet for Shipment

Use the original packing material to repack the cabinet for shipment. If the packing material is not available, contact your local Hewlett-Packard Sales and Support Office regarding shipment.

Before shipment, place a tag on the container (or equipment) to identify the owner and the service to be performed. Include the equipment model number and the full serial number, if applicable. The label showing the model number and the full serial number is located on the outside of the rear door.

Due to the weight of a fully loaded cabinet, it may require two people to push the cabinet up the ramp onto the pallet.

---

**WARNING**     **Repackaging a loaded cabinet can be hazardous. This is due to the weight of the loaded cabinet. Use caution when moving the cabinet and positioning the cabinet on the pallet. Check the condition of the loading/unloading ramp before use. If the ramp appears damaged, DO NOT attempt to push the loaded cabinet up the ramp onto the pallet. Contact your local Hewlett-Packard Sales and Support Office regarding shipment.**

---

To repack the cabinet, follow the repacking checklist and refer to the unpacking instructions for detail.

### Repacking Checklist:

1. Assemble the HP packing materials that came with the cabinet.
2. Connect the loading ramp to the pallet.
3. Raise the cabinet levelers before moving the cabinet.
4. Push the cabinet up the ramp onto the pallet. Be sure to position the cabinet so the front goes up the ramp first.
5. Secure the cabinet to the pallet with the shipping clamps, shipping block, and rear door support.
6. Place the anti-static bag over the cabinet.
7. Place bezel support packing on the front corners of the cabinet. Secure it with some sort of wrap.
8. Place the top cap packing material and loading/unloading ramp on top of the cabinet.
9. Wrap the clam shell box around the cabinet.
10. Put the box top on the box and secure the assembly to the pallet.

Be sure to follow the labeling instructions mentioned earlier. The cabinet is now ready for shipment.

Unpacking and Installation  
**Repackaging the Cabinet for Shipment**

# 3 Cabinet Operation

---

Once you have the computer system installed in the rack mount cabinet and all the peripherals connected, you are ready to turn on the system. The power up sequence for the computer in the cabinet is controlled by the ON/OFF switch on the cabinet, unless you have installed a PowerTrust UPS.

---

## Turning On the Computer System (Without UPS)

When turning on the computer in the cabinet, remember that includes all the components mounted in the cabinet turn on at the same time (if the component ON/OFF switches are in the ON position). The basic steps for the power up sequence are listed below, refer to the documentation that comes with the computer for specific details concerning the operating system software for your computer.

---

**CAUTION** Ensure external power connection matches voltage setting of all products in this cabinet.

---

1. Turn on all the external equipment connected to the computer first.
2. Check all READY or ONLINE indicators on the external equipment to be sure that they are powered up and ready.

---

**NOTE** If any of the external equipment has been OFF due to any environmental problem, such as heating or air conditioning failure, or outside storage conditions (such as a loading dock) allow approximately 30 minutes for the temperature of the equipment to stabilize before turning on the computer.

---

3. Be sure all the ON/OFF switches, of the components mounted in the cabinet, are in the ON position.
4. When all external equipment indicate READY or ONLINE, put the cabinet ON/OFF switch in the ON position. All components mounted in the cabinet are going to power up at the same time.

---

**NOTE** If there are multiple HP D Class computers mounted in the cabinet, you may want to power each one up separately. This would reduce the power surge through the cabinet PDU if all computers and equipment try to power up at the same time.

---

## Turning On the Computer System (with UPS)

When turning on the cabinet power, remember that all the components mounted in the cabinet turn on at the same time (if the ON/OFF switches are in the ON position), except the SPU. The basic steps for the power up sequence are listed below.

1. Turn on all the external equipment connected to the computer first.
2. Check all READY or ONLINE indicators on the external equipment to be sure that they are powered up and ready.

---

**NOTE** If any of the external equipment has been OFF due to any environmental problem, such as heating or air conditioning failure, or outside storage conditions (such as a loading dock) allow approximately 30 minutes for the temperature of the equipment to stabilize before turning on the computer.

---

3. Accept for the SPU, put all the ON/OFF switches, of the components mounted in the cabinet, in the ON position. Leave the SPU ON/OFF switch in the OFF position.
4. When all external equipment indicate READY or ONLINE, put the cabinet ON/OFF switch in the ON position. All components mounted in the cabinet are going to power up at the same time (accept for the SPU).
5. Put the UPS *Output* switch in the ON (|) position. This applies power to the SPU and console line cord.
6. Put the SPU and console switches in the ON position.
7. The computer system should now be powered up and executing the power-on selftests in preparation for a normal bootup procedure.

## Turning Off the Computer System (Without UPS)

The computer has no remote turn off sensor for ac power. If the cabinet switch is put in the OFF position before turning off the computer switch, the computer senses that as an ac power fail condition. Without a UPS attached to the D Class computer, there is no battery backup for the computer.

---

**CAUTION** DO NOT turn the cabinet power switch OFF before shutting down the D Class computer. All processes and data that have not been stopped or saved will be aborted or lost.

---

1. Put the computer power switch in the OFF position. This has to be done first so that the removal of ac by the cabinet power switch is not seen as an ac power failure by the computer.
2. Put the cabinet power switch in the OFF position. This removes ac from all the components mounted in the cabinet, except the computer.
3. At this point, external peripherals can be turned off if necessary.

---

## Turning Off the Computer System (With UPS)

If the cabinet ON/OFF switch is put in the OFF position, all components connected to the cabinet PDU will be turned off, this does not turn off the computer connected to the UPS.

1. Put the computer power switch in the OFF position.
2. Put the console power switch in the OFF position.
3. Put the UPS *Output* switch in the OFF (O) position.
4. Put the cabinet power switch in the OFF position. This removes ac from all the components mounted in the cabinet, except the computer connected to the UPS.
5. At this point, external peripherals can be turned off if necessary.

Cabinet Operation  
Turning Off the Computer System (With UPS)

# 4 Removal and Replacement Procedures

---

This chapter lists all the parts of the HP A3764A, and HP A3765A rack mount cabinet that can be replaced if damaged. It also provides the procedures for accomplishing the replacement of a damaged part. Refer to for a list of the cabinet parts that can be replaced if damaged.

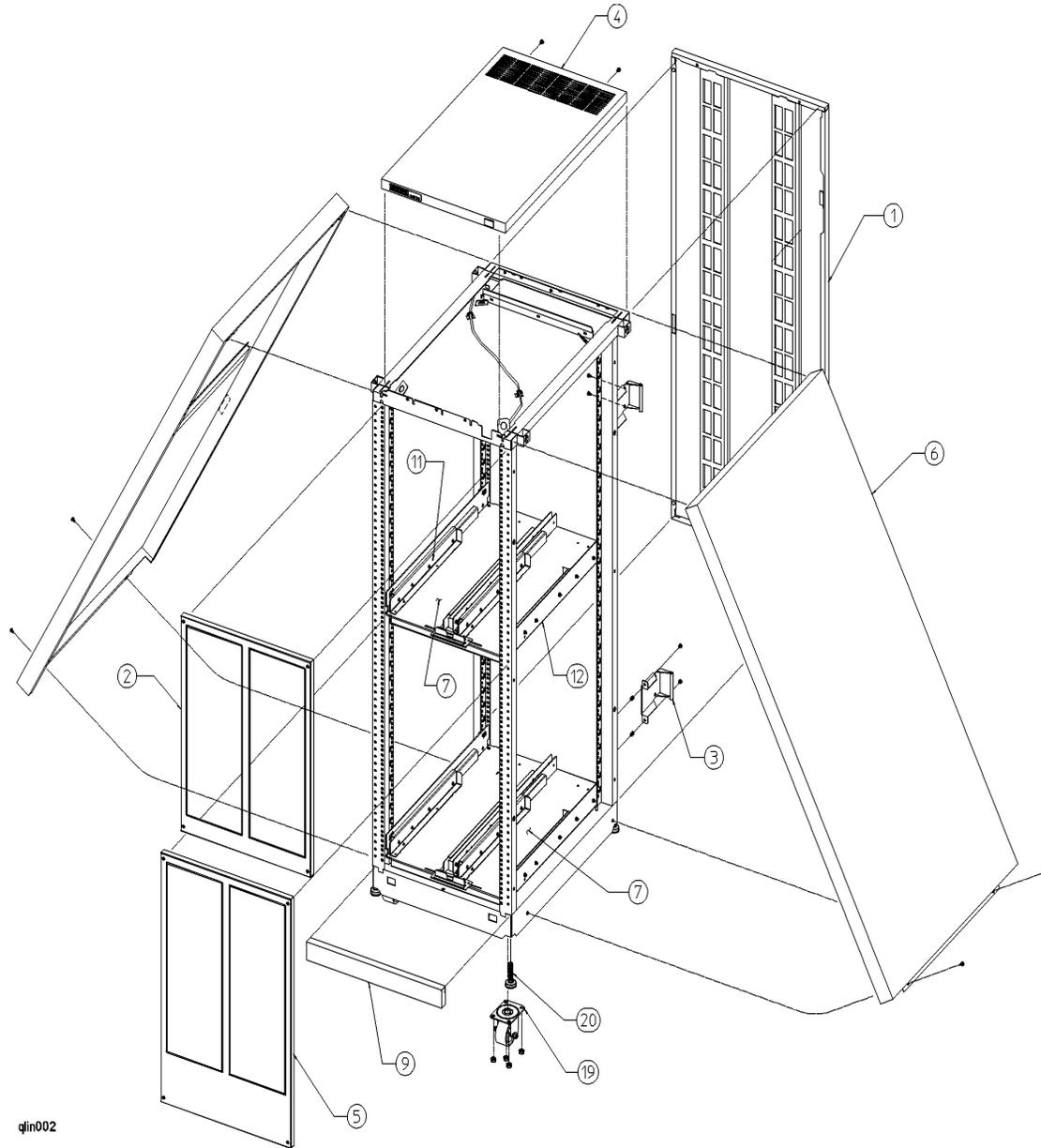
Refer to Figure 4-1 and Figure 4-2 for part location identification. Also use the figures for reference while performing the procedures outlined in this chapter.

## **Tools Required:**

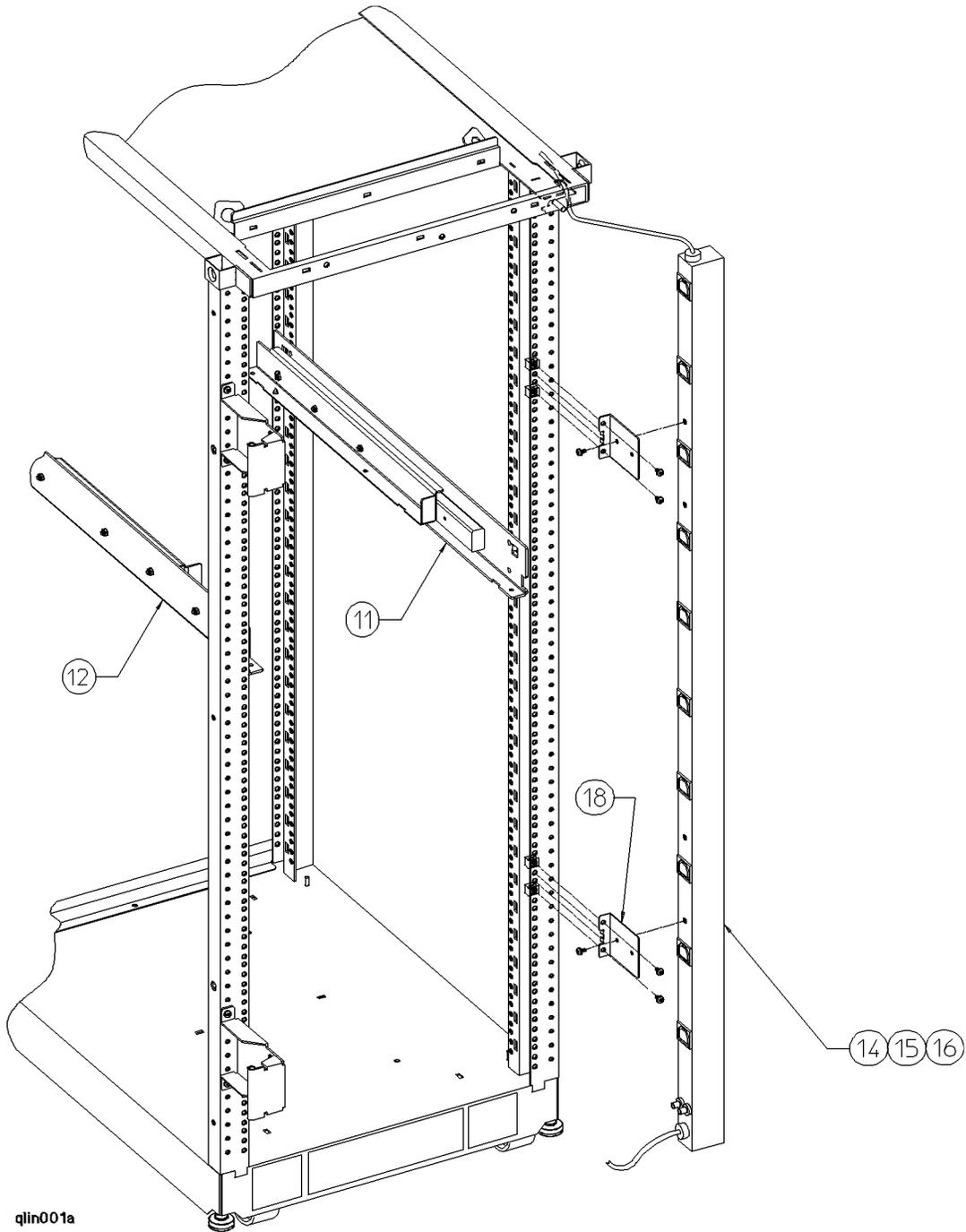
To remove and replace components of the cabinet, you will need the standard CE tools. In addition to those tools you will need the following tools.

- Torx #T25
- Torx #T15
- Torx #T10
- 3/8" wrench or nut driver
- 9/16" wrench or nut driver

**Figure 4-1 Cabinet Exploded View Front**



**Figure 4-2 Cabinet Exploded View Back**



**Table 4-1 A3764A and A3765A Cabinet Replaceable Parts**

<b>No.</b>	<b>Part No.</b>	<b>Description</b>
1	A3764-62001	Rear door assembly, 1.6 meter
	3110-0197	Lock
	E3661-00010	Latch Catch
	0403-0780	Door Bumper
2	A3764-00031	Upper cosmetic frame
3	C2786-00012	Rear hinge
4	A3764-00008	Vented top cap
5	A3764-00032	Lower cosmetic frame
6	C2786-60014	Side cover, 1.6 meter
	5181-8714	On/Off Switch 220V
	C2786-40006	On/Off Switch window
7	A3764-62013	23 inch shelf assembly (upper and lower)
9	C2786-00014	Base cover, 1.6 meter
11	A3764-62011	Left rail and slide assembly
12	A3764-62002	Right rail and slide assembly
14	C2786-63006	US 208-240V PDU, 1.6 meter
15	C2786-63007	EURO 230V PDU, 1.6 meter
18	C2786-00021	PDU Support Bracket
19	1492-0159	Caster
	0535-0096	Nut- Wiz, M8 x 1.25 (caster)
20	0403-0778	Leveler
	A3764-60065	Ground cable
	A3764-00014	Cosmetic filler panel
	A3764-00029	19 inch cosmetic frame
	A3764-00013	Left 19 inch adapter column
	A3764-00004	Right 19 inch adapter column
	A3764-00026	Vertical safety rod
	A3764-62010	Retainer bracket assembly
	A3764-00016	Upper safety rod bracket

<b>No.</b>	<b>Part No.</b>	<b>Description</b>
	A3746-00030	Lower safety rod bracket
	A3764-00017	Computer carrier tray
	C2786-60001	1U Filler assembly
	8120-1860	Rack device power cord, 5 ft.
	8120-1396	Rack device power cord, 30 inches
	8120-5470	Rack device Power cord, 20 inches
	2680-0281	Screw, T25 10/32
	2680-0278	Screw, T15 10/32 w/washer
	0507-1601	3/8-16 hex head bolt
	0361-1640	plastic push pegs
	2190-0313	nylon washer
	0590-0364	10-32 stop nut
	0590-0804	Nut-Tinnerman 10/32

## Removal and Replacement Procedures

The following procedures are for the HP Field Replaceable Units (FRUs) contained in the HP A1896A or HP A1897A rack-mount cabinets.

### Rear Door

Refer to Figure 4-1 while performing these procedures.

#### Rear Door Removal:

1. Remove the rear door of the cabinet by opening the door.
2. Disconnect the ground wire from the door.
3. Grasp the rear door support and lift the door straight up and away from the cabinet.

#### Rear Door Replacement:

1. Hold the rear door by the support column, in an open position.
2. Align the door hinge pins over the cabinet hinge holes.
3. Lower the door onto the cabinet hinge.
4. Reconnect the ground wire to the door.

### Rear Door Hinge

Refer to Figure 4-1 while performing these procedures.

#### Rear Door Hinge Removal:

1. Remove the rear door (refer to rear door removal).
2. Remove the two mounting screws from the cabinet column (also remove the two mounting screws in the side panel), and lift the door hinge away.

#### Rear Door Hinge Replacement:

1. Align door hinge with the pressed nuts in the rear cabinet column.
2. Insert the two mounting screws through the hinge into the column (insert the two mounting screws into the side panel). Tighten the screws.

### Rear Door Support

The rear door support adds stability to the rear door when closed.

#### Rear Door Support Removal:

1. Open the rear door.
2. Remove the rear door support mounting screw and pull the door stop away.

### **Rear Door Support Replacement:**

1. Align door support over mounting hole in top cap and frame.
2. Insert mounting screw and tighten.

### **Rear Door Bumper**

The rear door bumpers (one top and one bottom) are self-adhesive rubber bumpers stuck to the rear door. To remove, pry it off with a flat blade screwdriver. To put a bumper on, peel off the adhesive cover, and press the bumper on the appropriate corner of the rear door.

### **Top Cap**

Refer to Figure 4-1 while performing these procedures.

#### **Top Cap Removal:**

1. Turn the cabinet power switch OFF (if present) and unplug the cabinet power cord.
2. Open the rear door all the way.
3. Remove the two outside mounting screws at the top rear of the cabinet (the right one also holds the door support in place).
4. Then, from the rear of the cabinet, lift the back of the top cap a few inches and push forward.
5. If Present, remove the PDU wiring from the cabinet switch. If the cabinet contains two PDUs remove all wiring attached to the switch.
6. Lift the top cap off the cabinet.

#### **Top Cap Replacement:**

1. From the rear of the cabinet, position the top cap between the side covers and slightly forward to align the top cap properly.
2. Reconnect the PDU harness to the cabinet switch. Refer to Figure 4-3 for wiring order.
3. While lifting the rear of the top cap, pull the top cap towards the back and let it down over the rear cabinet frame. Be sure the two mounting holes align with the frame holes.
4. Insert the two mounting screws at the top rear (the right mounting screw holds the door support in place). Tighten the screws.
5. Close the rear door. Plug the cabinet power cord into the wall outlet and power up the computer system.

## Side Cover

Refer to Figure 4-1 while performing these procedures.

### Side Cover Removal:

1. Remove the two mounting screws at the bottom of the cabinet.
2. On the right side cover, open the rear door and remove the two mounting screws on the upper door hinge and lower door hinge (that secure the hinge to the side panel).
3. Grasp the sides of the side cover (pulling the bottom of the panel away from the cabinet offers a better grip), then lift up and away.

### Side Cover Replacement:

1. Grasp the side cover on the sides and align it with the cabinet at a vertical angle with the bottom out and the top toward the top of the cabinet.
2. Lower the side onto the top edge of the cabinet side so the top of the side cover hooks onto the top of the cabinet.
3. With the side cover flush with the cabinet frame and insert the two mounting screws in the bottom. Tighten the screws.
4. On the right side cover, insert the mounting screws through the upper and lower door hinge into the side panel and tighten screws.

## Base Cover

Refer to Figure 4-1 while performing these procedures.

### Base Cover Removal:

1. Remove the mounting screw located on the top edge, center, of the base cover.
2. Pull the base cover away from the bottom of the cabinet.

### Base Cover Replacement:

1. Align the base cover hooks on the bottom of the cabinet frame and roll the base cover until the mounting holes in the cabinet and base cover align.
2. Insert the mounting screw. Tighten the screw.

## PDU

Refer to Figure 4-2 while performing these procedures.

### PDU Removal:

1. Turn OFF the power switch on the front of the cabinet.
2. Unplug the cabinet power cord from the wall outlet.
3. Remove the top cap (refer to top cap removal).
4. Unplug the PDU harness from the back of the ON/OFF switch.

5. Unclip the PDU harness from the cable clamps on the cabinet frame top and pull the PDU harness down through the top frame.
6. Remove all component power cords from the PDU.
7. Remove the four (two on each bracket) mounting screws from the PDU mounting brackets that attach to the frame columns.
8. Lift the PDU up to disengage, the PDU mounting bracket hooks from the frame column.
9. Pull the PDU out of the cabinet.

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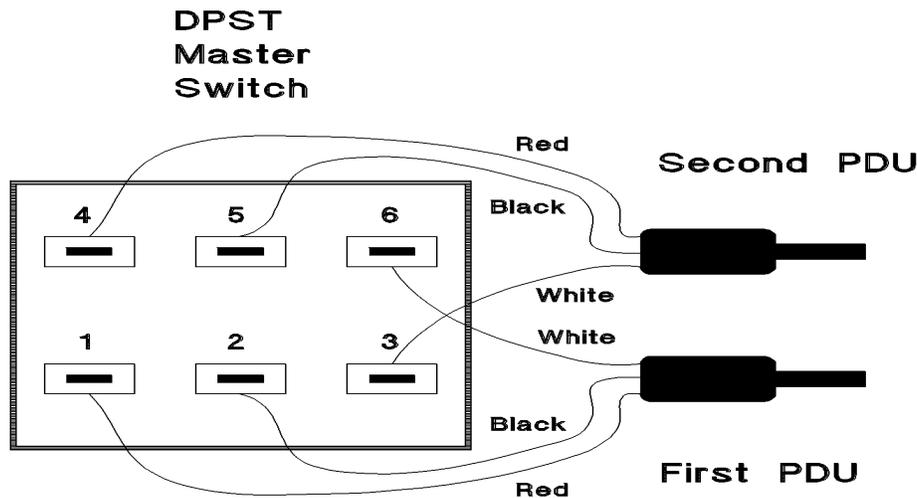
**NOTE** The PDU mounting brackets could be removed at this point if necessary.

---

**PDU Replacement:**

1. Align the PDU (with the brackets attached) on the right rear column of the cabinet frame.
2. Insert the PDU bracket hooks into the column holes and lower the PDU until it rests on the column.
3. Insert the PDU mounting screws through the brackets into the column with slip nuts attached.
4. Route the PDU harness up through the top of the cabinet and through the cable clamps.
5. Plug the PDU harness onto the ON/OFF switch. Refer to Figure 4-3 wiring diagram.

**Figure 4-3 Cabinet Switch Wiring Diagram**



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6. Replace the top cap (refer to top cap replacement).
7. Reconnect all the cabinet components to the PDU(s).

8. Plug the PDU power cord(s) into the wall outlet.
9. The cabinet and computer are ready to be powered up.

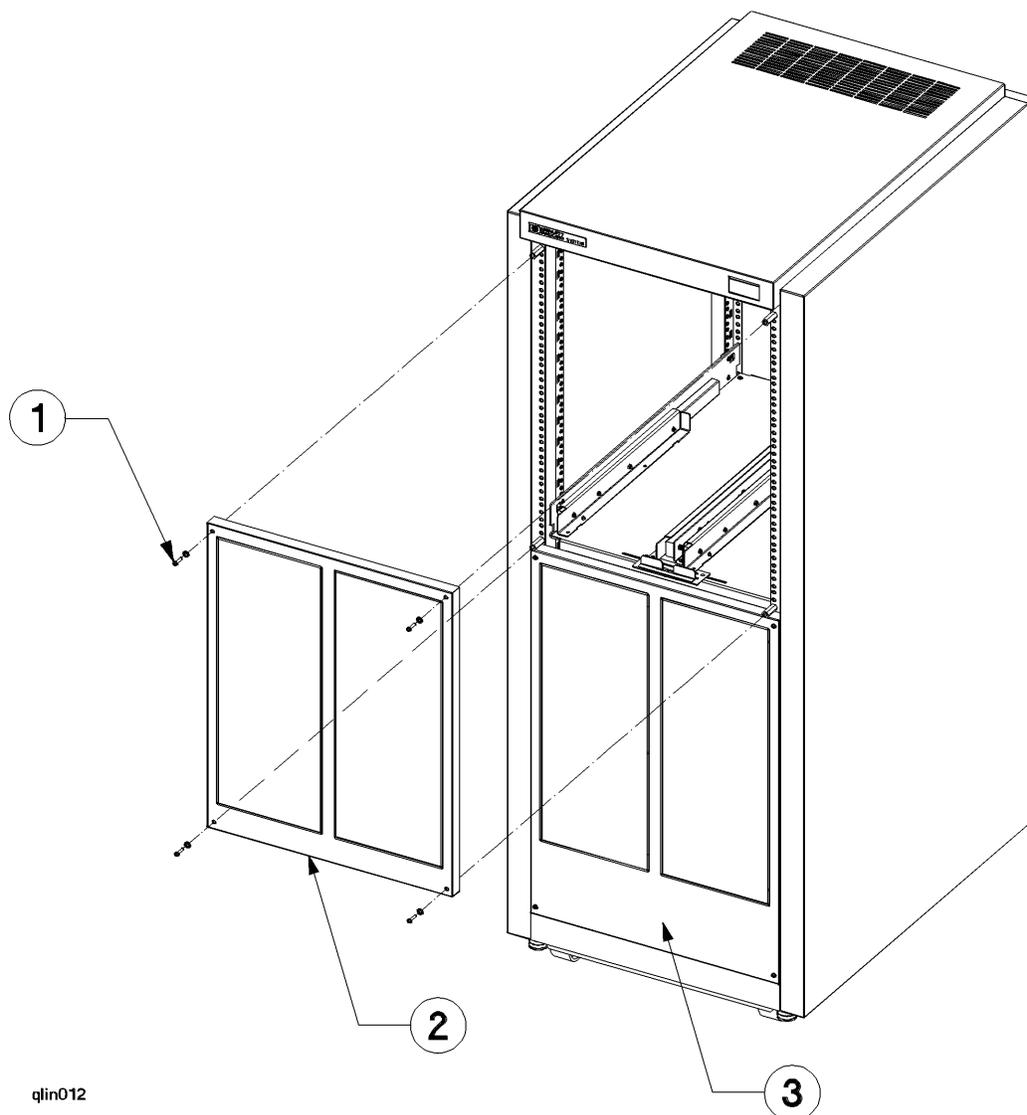
## Upper Cosmetic Frame

The Upper and lower cosmetic frames are not inter-changeable. Each frame contains two cosmetic panels. Refer to Figure 4-4 while performing these procedures.

### Upper Cosmetic Frame Removal:

1. Remove the four mounting screws and nylon washers (1) holding the frame (2) to the cabinet. Be sure to keep the mounting screws and nylon washers together.
2. Be sure to hold the frame (2) in place while removing the last mounting screw, as the frame will fall away from the cabinet with no mounting screws in place.

**Figure 4-4 Cosmetic Frame Diagram**



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## Cosmetic Panel

The cosmetic panel(s) are held in place with six plastic push pegs. These pegs can be removed easily with a pair of long nose pliers. Compress the inside of the pin while pushing it towards the outside of the frame.

### Upper Cosmetic Frame Replacement:

1. Place cosmetic frame over top mounting space of the cabinet.
2. While holding the Cosmetic frame in place, insert the four mounting screws plus nylon washers, then tighten screws

## Lower Cosmetic Frame

The Upper and lower cosmetic frames are not inter-changeable. Each frame contains two cosmetic panels. Refer to Figure 4-4 while performing these procedures.

### Lower Cosmetic Frame Removal:

1. Remove the four mounting screws and nylon washers holding the lower cosmetic frame (3) to the cabinet. Be sure to keep the mounting screws and nylon washers together.
2. Be sure to hold the lower cosmetic frame (3) in place while removing the last mounting screw, as the frame will fall away from the cabinet with no mounting screws in place.
3. Refer to the *Cosmetic Panel* section for instructions concerning the cosmetic panels.

### Lower Cosmetic Frame Replacement:

1. Place the lower cosmetic frame (3) over lower mounting space of the cabinet.
2. While holding the frame in place, insert the four mounting screws plus nylon washers, then tighten screws

## D Class Computer

Before removing a computer from the cabinet, be sure that the computer data base has been recently backed up. To remove a D Class computer from the cabinet, perform the following steps.

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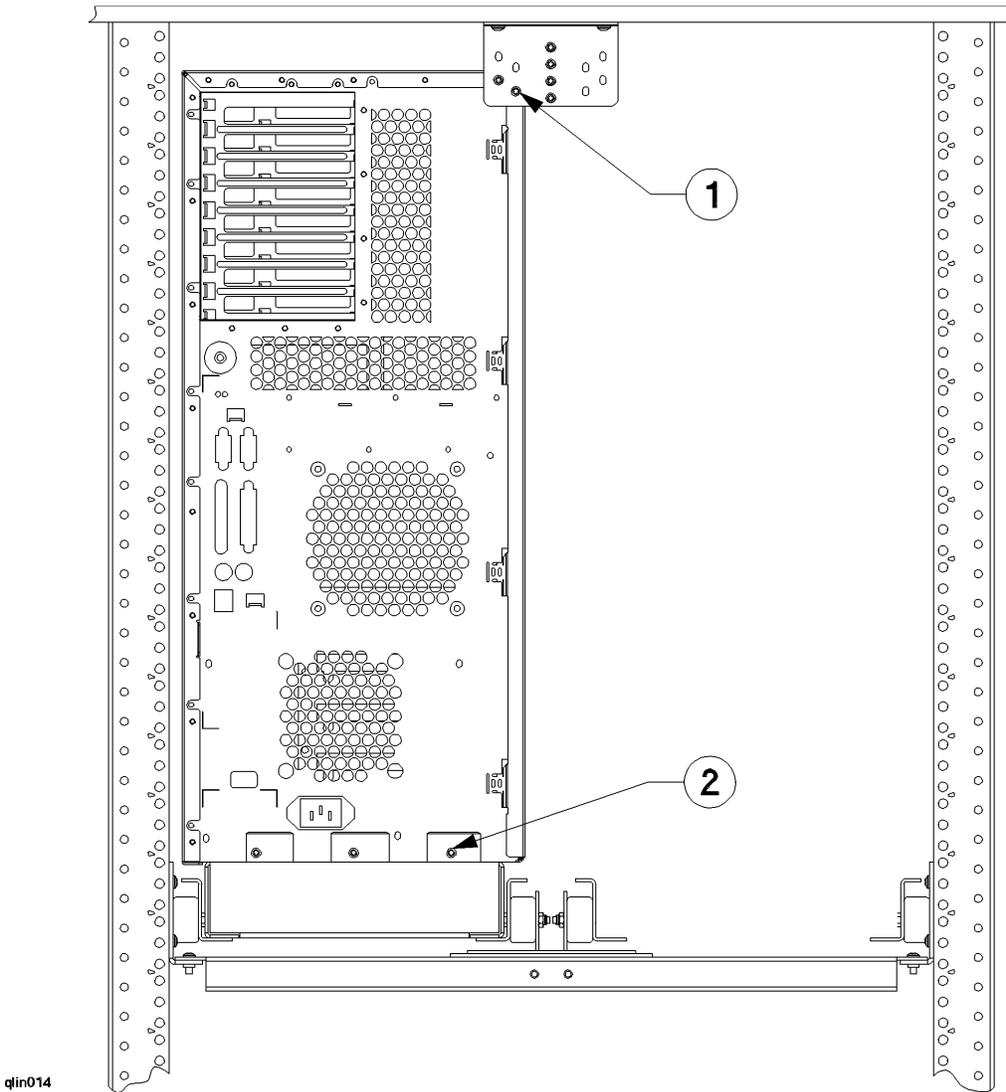
**WARNING**     **The D Class computer can weight up to 49.5 kg (110 lbs.). It is recommended that two CEs lift the computer off or onto the cabinet mounting assemblies.**

---

### D Class Computer Removal:

1. Put the D Class power switch in the OFF position.
2. Remove the power cord from the back of the computer. Also remove all I/O and interconnect cables from the back of the computer.
3. Refer to Figure 4-5. Remove the two screws (1) holding the computer frame to the retainer bracket, located in the rear, upper corner (left or right). This allows the computer to slide in and out of the cabinet.

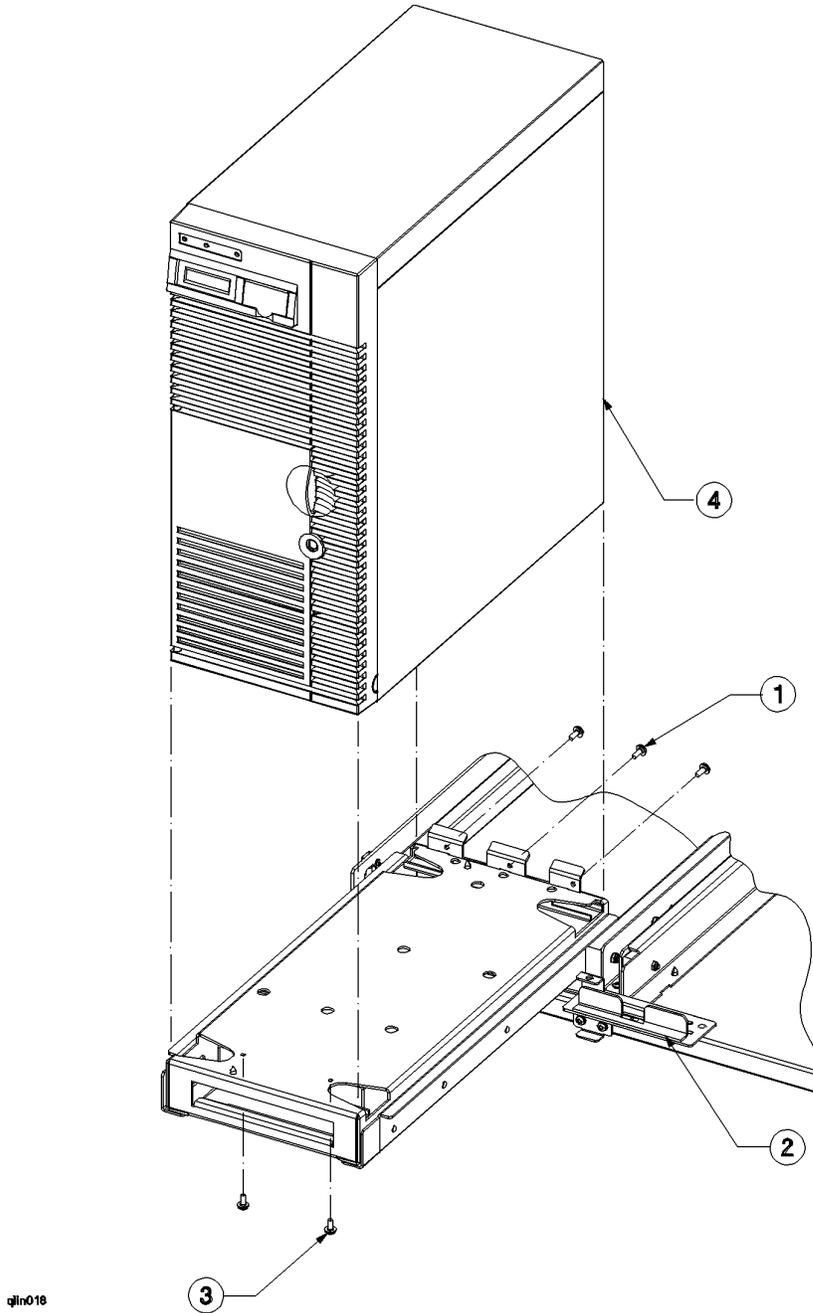
**Figure 4-5 D Class Retainer Bracket**



4. Refer to Figure 4-5. Remove the three tray mounting screws (2) from the lower, back of the computer frame.
5. Remove the cosmetic frame (refer to upper or lower cosmetic frame instructions).

6. Refer to Figure 4-6. Move the computer lockout slide (2) away from the front of the computer, this inhibits all other computers in the cabinet from being extended. Fully extend the computer on the slide rails.

**Figure 4-6 D Class Computer Removal Diagram**



7. From under the tray, remove the two tray mounting screws (3), that hold the front of the computer to the tray. Be sure the three back mounting screws (1) are removed.
8. Lift the D Class computer (4) off the tray and shelf assembly.

### **D Class Computer Replacement:**

1. Align the computer over the extended tray and slide assembly and lower the computer onto the tray.
2. Refer to Figure 4-6. From under the front, insert the two tray mounting screws (3), do not tighten yet.
3. From the back insert the three tray mounting screws (1), through the tray flanges into the computer frame. Tighten these three, then tighten the two under the front (3).
4. Depress the green slide lock buttons on each side and slide the computer into the cabinet.
5. Move the computer lockout slide (2) back to the center position.
6. Replace the cosmetic frame (refer to upper or lower cosmetic frame instructions).
7. Insert the two retainer screws through the retainer bracket into the computer frame, upper corner, and tighten.
8. Replace all I/O and interconnect cables to the back of the computer.
9. Re-connect the power cord.

The computer should now be ready to turn on and operate.

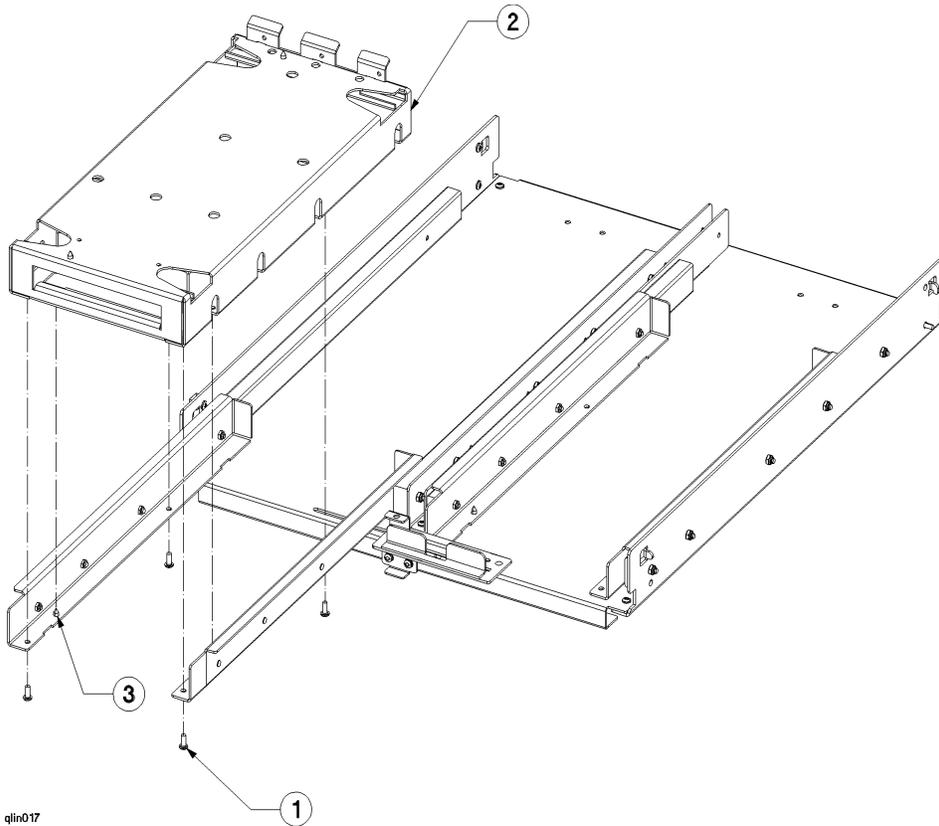
### **Computer Tray**

To remove and replace the computer tray refer to Figure 4-7 and perform the following steps.

#### **Computer Tray Removal:**

1. Remove D Class computer (refer to D Class computer removal instructions).
2. Be sure tray and slide assembly is fully extended.
3. From underneath, remove the four (one on each corner) tray mounting screws (1).
4. Lift the tray (2) off the L bracket and slide assembly.

**Figure 4-7 Computer Tray Diagram**



**Computer Tray Replacement:**

1. Align tray over the fully extended L bracket and slide assembly guide pins (3), and lower into place.
2. From underneath the tray (2), insert the four mounting screws (1) and tighten.
3. Install D Class computer onto the tray and slide assembly (refer to D Class computer replacement instructions).

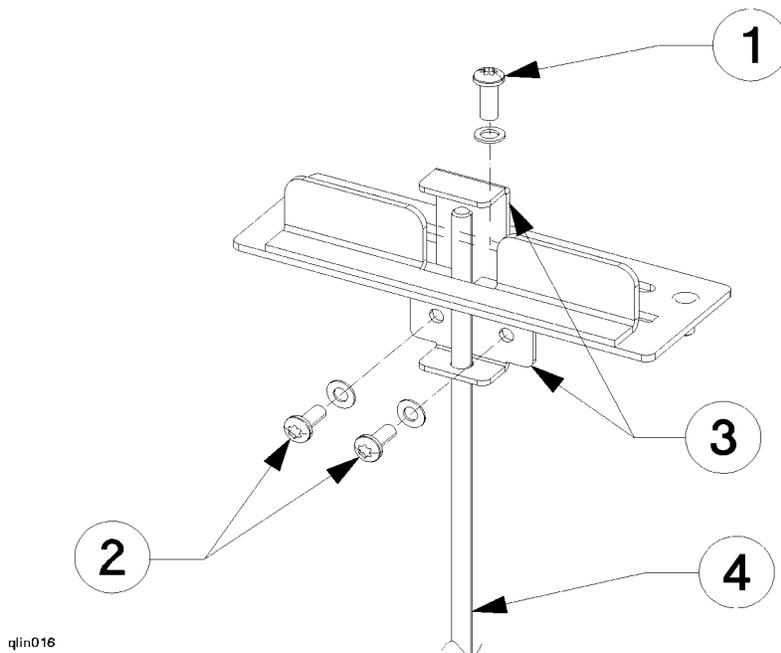
**Computer Lock out Assembly**

There can be two computer lock out assemblies (one upper and one lower) in a 4 computer cabinet. These assemblies are inter-connected by a safety rod to allow one computer to be extended at a time. The computer lock out assembly is a manual device and should be centered during normal cabinet operation.

**Computer Lock Out Assembly Removal:**

1. Refer to Figure 4-8. From the top lock out assembly, remove the center slide and mounting screw (1) and lift off the lock out slide.

**Figure 4-8 Computer Lockout Assembly Diagram**



2. Remove the two mounting screws (2) from the top safety channel bracket, and pull the safety channel bracket (3) off the safety rod (4).
3. Lift the safety rod out of the cabinet.
4. The lower lock out assembly can now be removed (if necessary), by repeating steps 1 and 2 on the lower assembly.

---

**NOTE** If the lower lock out assembly was not removed, steps 1 and 2 of the replacement procedures can be skipped. Start with step 3.

---

**Computer Lock Out Assembly Replacement:**

1. Align the lower safety channel bracket with the two cabinet mounting holes and insert mounting screws and tighten.
2. Align the center slide, with the tabs toward the front of the cabinet, over the center hole in the shelf assembly and insert the slide screw and washers.
3. Place the safety rod (4) into the bottom lock out assembly.
4. Align the upper safety channel bracket (3) with the two cabinet mounting holes and insert mounting screws (2) and tighten.
5. Align the center slide, with the tabs toward the front of the cabinet, over the center hole in the shelf assembly and insert the slide screw and washers (1).

The computer lock out assembly is a manual device and should be centered during normal cabinet operation.

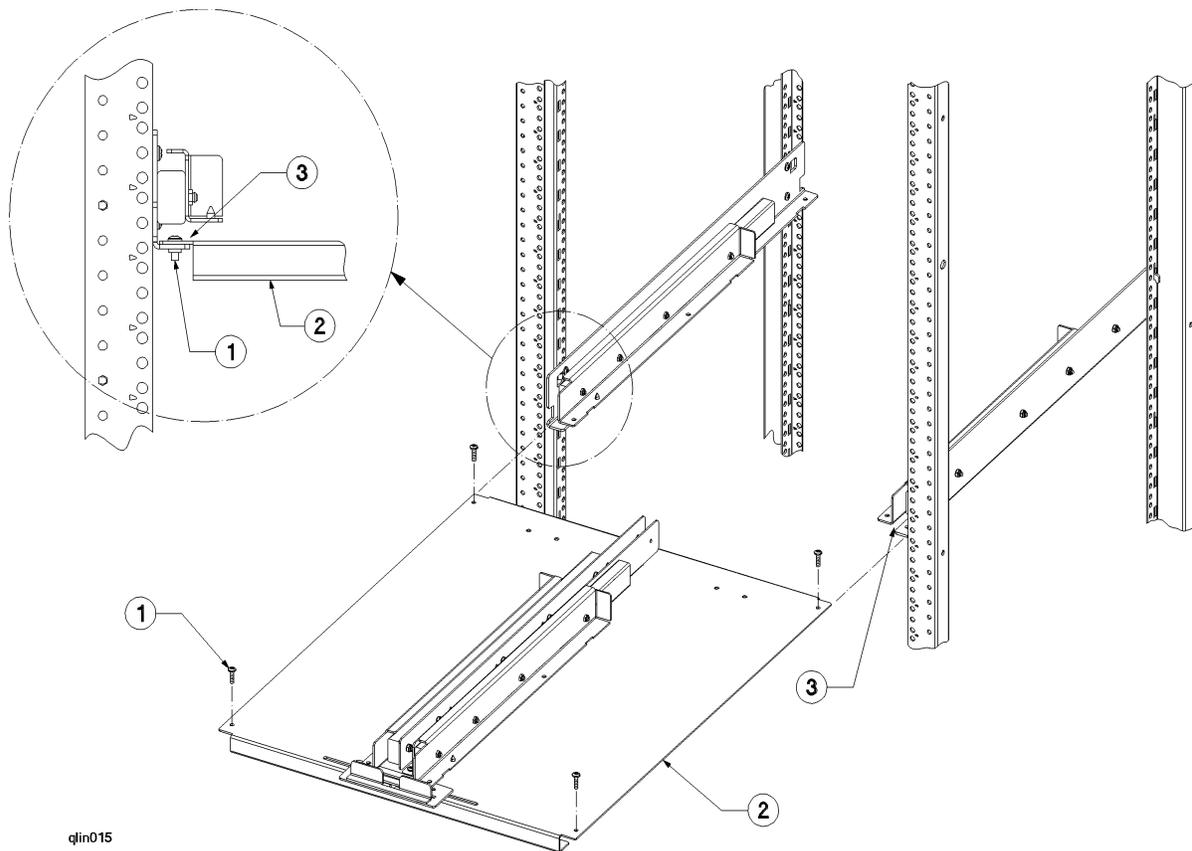
## Shelf Assembly

The shelf assembly has the middle rails and slides attached to the shelf plate. To remove and replace either the upper or lower the shelf assembly, perform the following steps.

### Shelf Assembly Removal:

1. Remove the D Class computer (refer to D Class Computer Removal instructions).
2. Remove the computer tray (refer to Computer Tray Removal).
3. Remove the computer lock out assembly (refer to Computer Lock Out Assembly removal).
4. Be sure the side rail and slides are fully pushed back into the cabinet for front shelf assembly mounting screw access.
5. Refer to Figure 4-9. Remove the four (one at each corner) shelf assembly mounting screws (1). These screws hold the shelf assembly (2) to the side rail assemblies (3).

**Figure 4-9 Shelf Assembly Diagram**



6. From the front of the cabinet, slide the shelf assembly (2) out of the cabinet. Note the shelf fits in a slot (3) between the lower lip and upper part of the rail and slide assembly.

---

**NOTE**        The upper shelf assembly has a computer retainer bracket attached to the under side of the shelf, be careful not to bump or bend the retainer bracket.

---

### **Shelf Assembly Replacement:**

1. Be sure side rail and slide assemblies are fully pushed back into the cabinet.
2. Refer to Figure 4-9. Align shelf assembly (2), with middle rails and slides toward the front of the cabinet, edges into the slot (3) between the lower lip and upper part of the rail and slide assemblies.
3. Slide the shelf assembly (2) into the cabinet until the four mounting holes match, insert the four mounting screws (1) and tighten
4. Replace the computer lock out assembly (refer to Compute Lock Out Assembly Replacement).
5. Replace the computer tray (refer to Computer Tray Replacement).
6. Replace the D Class computer (refer to D Class Computer Replacement).

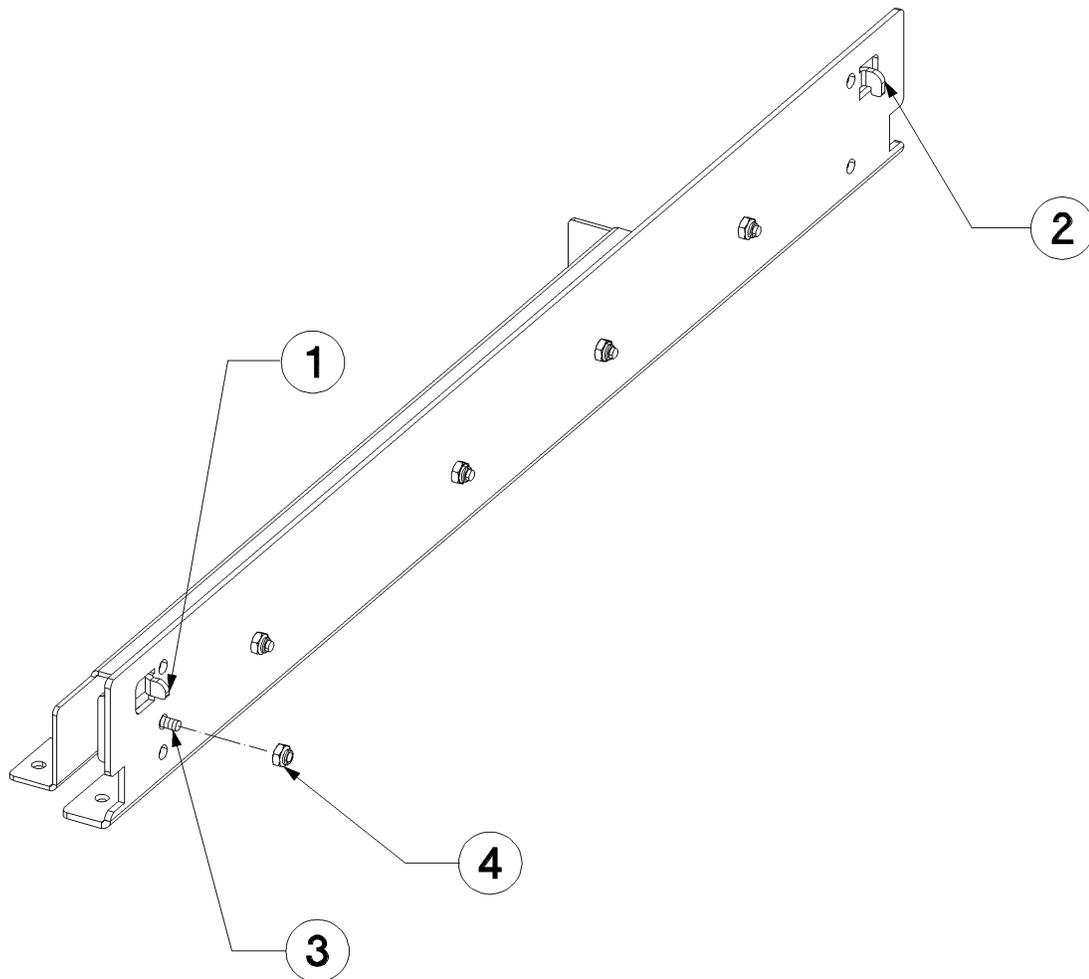
### **Side Rail and Slide Assembly**

The side rail and slide are a single assembly. To remove and replace the rail and slide assembly, perform the following steps.

#### **Side Rail and Slide Assembly Removal:**

1. Remove the D Class computer (refer to D Class Computer Removal instructions).
2. Remove the computer tray (refer to Computer Tray Removal).
3. Remove the computer lock out assembly (refer to Computer Lock Out Assembly removal).
4. Remove the shelf assembly (refer to Shelf Assembly Removal).
5. Remove the three (2 back and 1 front) side rail to cabinet frame mounting screws.
6. Refer to Figure 4-10. From the front, remove the nut (4) from side rail bolt (3) that goes through the cabinet frame. This is an elastic stop nut (4).

**Figure 4-10 Side Rail and Slide Assembly**



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7. From the front, pull the side rail away from the cabinet frame disengaging the front tab (1) and rail bolt (3), then lift the back of the side rail away from the cabinet frame, disengaging the hook tab (2) from the rectangular slot in the cabinet frame.
8. Repeat steps 5 through 7 for each side rail (left or right, upper or lower).

**Side Rail and Slide Assembly Replacement:**

1. Refer to Figure 4-10. At the back of the cabinet, position the side rail in line with the two press nuts, and insert the hooked tab (2) into the second rectangular slot in the cabinet frame. Then insert the front side rail bolt (3) through the matching hole in the front cabinet frame.
2. Replace the nut (4) and the three (one front, 2 back) mounting screws and tighten.
3. Repeat steps 1 and 2 for each side rail and slide assembly.
4. Replace the shelf assembly (refer to Shelf Assembly Replacement).
5. Replace the computer lock out assembly (refer to Computer Lock Out Assembly Replacement).

6. Replace the computer tray (refer to Computer Tray Removal).
7. Replace the D Class computer (refer to D Class Computer Replacement instructions).

## **19 Inch Cosmetic Frame**

The 19 inch cosmetic frame must be removed before accessing any 19 inch peripheral device mounted in the lower section of the cabinet.

### **19 inch Cosmetic Frame Removal:**

1. Remove the four mounting screws and nylon washers holding the 19 inch cosmetic frame to the cabinet.
2. Pull the 19 inch cosmetic frame away from the cabinet.

You should now be able to access the peripherals mounted in the lower section of the cabinet. Be sure to follow all shutdown (or power down) procedures described for the intended peripheral. Refer to the particular peripherals documentation for information regarding the peripheral in question.

### **19 inch Cosmetic Frame Replacement:**

1. Align the 19 inch cosmetic frame over the mounting standoffs on the cabinet frame.
2. insert the four mounting screws and nylon washers and tighten.

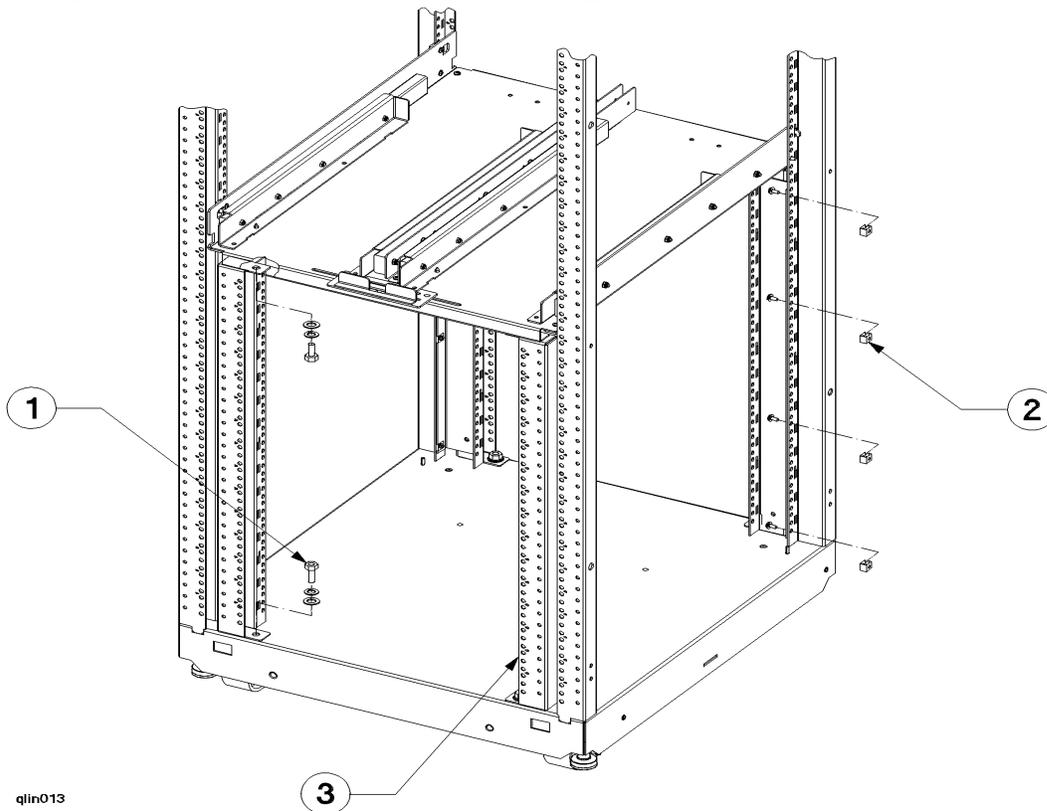
## **19 Inch Vertical Cabinet Rails**

The 19 inch vertical rails in the cabinet are left and right oriented. Look for an L or R stamp on one end of the rail and orient the L and R according to the way you are facing the cabinet.

### **19 inch Vertical Cabinet Rail Removal:**

1. Remove the 19 inch cosmetic frame (refer to 19 Inch Cosmetic Frame Removal).
2. Remove all peripheral devices mounted in the lower section of the cabinet.
3. Remove the two (one top and one bottom) mounting bolts (1) from the vertical rails (3).

**Figure 4-11 19 Inch Vertical Rail Diagram**



4. Remove the four screws holding the 19 inch vertical rail to the cabinet rail. Also remove the four tinnerman nuts (2) clipped to the cabinet rails.
5. Pull the vertical rail (3) out of the cabinet.
6. Repeat steps 3 and 4 for each (left or right, front or back) vertical rail to be removed.

**19 inch Vertical Cabinet Rail Replacement:**

1. Be sure there are tinnerman nuts (2) on the cabinet rails at hole positions 1, 15, 31, and 45 (from the bottom).
2. Place the vertical rail (3) (be sure to observe the L and R stamp) inside the cabinet and align the two mounting holes (one top and one bottom).
3. Insert the two (one top and one bottom) mounting bolts (1) through the vertical rail holes into the cabinet and leave them loose at this time.
4. Insert the four mounting screws through the 19 inch vertical rails into the tinnerman nuts in the cabinet rails and tighten. Then tighten the two mounting bolts.
5. Replace all peripheral devices removed in the lower section of the cabinet.
6. Replace the 19 inch cosmetic frame (refer to 19 Inch Cosmetic Frame Replacement).

## **Cabinet Leveler or Caster**

Refer to Figure 4-1 while performing these procedures.

### **Leveler or Caster Removal:**

1. Turn Off the cabinet power switch.
2. Unplug the cabinet power cord from the wall outlet.
3. Carefully move the cabinet to an area with enough room to allow the cabinet to be laid on its side.
4. Remove all computer components mounted in the cabinet.
5. Carefully lay the cabinet over on one of its sides.
6. Unscrew the desired leveler, or remove the desired caster by removing four mounting nuts and pulling the caster off.

### **Leveler or Caster Replacement:**

1. With the cabinet still on its side, screw in the leveler. Or, place the caster over the four mounting studs, and attach the four mounting nuts. Tighten the nuts.
2. Carefully lift the cabinet back up to an upright position.
3. Install all computer components that were removed previously.
4. Carefully move the cabinet to its install site.
5. Plug the cabinet power cord into the wall outlet.
6. The cabinet is now ready for operation.

## **Lock and Latch**

The lock and latch are located in the rear door.

### **Lock and Latch Removal:**

1. Open the rear door.
2. Grasp the bracket supporting the lock and latch mechanism.
3. Remove the screw and star washer in the center of the bracket. The bracket will slide off, and the lock and latch mechanism will slide out from the rear door.
4. Carefully note the position of the two screws attaching the latch catch to the cabinet frame (the middle holes in segment 7 and 8 along the right rear cabinet frame). You will need to mount the latch catch in the same position when replacing the mechanism.
5. Remove the two screws securing the latch catch to the cabinet frame.

### **Lock and Latch Replacement:**

1. Align the two screw holes in the rear of the latch catch with the hole positions noted in the removal process.
2. Attach the latch catch to the frame with two screws.

3. Slide the lock and latch mechanism through the hole in the outside of the rear door, with the lock facing out.
4. Open the rear door and place the bracket over the latch mechanism, centering the hole in the bracket over the hole in the lock mechanism.
5. Attach the bracket to the lock mechanism by inserting and tightening the screw and star washer.



# 5 Computer Access

---

Computers mounted in the A3764A or A3865A cabinet can only be accessed one at a time. This is a safety feature to avoid cabinet instability if too many heavy components are extended at the same time. Each shelf assembly can accommodate two D Class computers. The cabinets can accommodate two shelf assemblies, providing cabinet space to mount up to four D Class computers. To access a computer mounted in the A3764A or A3765A cabinet perform the steps listed in the *Access Procedure* section.

---

## Required Tools

Before beginning the installation process, make sure you have the necessary tools.

- Standard CE hand tools (including Torx-drive set).

---

## Access Procedures

Before performing any service or modifications to a computer, be sure the computer has been backed up. Only one computer can be accessed at a time, this includes upper to lower mounted computers. Also, if the computer needs to be removed from the cabinet, refer to the removal procedures listed in *Chapter 4*.

---

**WARNING**     **If the cabinet you are working has the two upper computers, plus a 19 inch component lower bay, DO NOT extend lower components at the same time one of the upper computers is extended. This could cause a stability problem with the cabinet.**

---

1. Turn off the computer to be accessed.
2. Remove the cosmetic frame (upper or lower) by removing the four mounting screws and nylon washers.
3. Move the lockout slide away from the access computer. If it is a lower computer, you have to slide the safety rod up, then while holding the safety rod up, move the lockout slide. This locks out the upper computers while accessing the lower computers.

---

**CAUTION**     Be careful of cables connected to the back of the computer, they may not have enough slack to allow full extension of the computer. Disconnect any questionable length cables.

---

4. From the back of the cabinet, remove the two retainer bracket screws from the upper corner (left or right depending on which computer is being accessed) of the computer.

---

**NOTE** The retainer bracket screws can be stored in the retainer bracket center holes until they are ready to be re-inserted.

---

5. Grasp the tray assembly, just under the front of the computer, and pull the computer out on its rails to the fully extended position.

You can now remove the D Class computer front bezel and access the inside of the computer. Refer to your *D Class Service Manual* for instructions on accessing the components of the computer.

---

## Button-up Procedures

When you are finished with the computer, perform the following steps to put the computer back into the cabinet.

---

**NOTE** Before putting the computer back into the cabinet, be sure that all the service procedures have been completed and the computer has been properly closed up and the front bezel replaced.

---

1. Close the side door on the D Class computer and tighten the three screws to secure the side panel.
2. Replace the computer front bezel.
3. On each side of the rail assembly, press the green button to unlock the rails, and push the computer back into the rack.
4. Make sure the computer is fully pushed back into the cabinet, then slid the lockout bracket back to its center position.
5. Insert the two retainer bracket mounting screws through the bracket into the computer chassis, and tighten.
6. Re-connect any cables that were removed to extend the computer. Attach any appropriate new cables to accommodate the modification or service performed.
7. Position the cosmetic frame over the mounting stand-offs and insert the four mounting screws and nylon washers.

The computer may now be powered on. Observe the computer for proper selftest and boot up procedures. You can now perform any configuration or application initiation procedures that may be required. Be sure to inform the customer that the computer is back on line.



