

Dell™ Systems

# Rack Installation Guide

Guide d'installation du rack

Rack-Installationsanleitung

ラック取り付けガイド

Guía de montaje del rack



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Dell™ Systems

# Rack Installation Guide



# Notes, Notices, and Cautions



**NOTE:** A NOTE indicates important information that helps you make better use of your computer.



**NOTICE:** A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



**CAUTION:** A CAUTION indicates a potential for property damage, personal injury, or death.

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**April 2002 P/N 5J802 Rev. A00**

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# Safety Instructions


Use the following safety guidelines to ensure your own personal safety and to help protect your server, storage system, or appliance from potential damage. For complete safety and regulatory information, see your *System Information* document. Warranty information might be included within this document or as a separate document.


## **Precautions for Rack-Mountable Products**

Observe the following precautions for rack stability and safety. Also refer to the rack installation documentation accompanying the system and the rack for specific warning and/or caution statements and procedures.

Servers, storage systems, and appliances are considered to be components in a rack. Thus, "component" refers to any server, storage system, or appliance, as well as to various peripherals or supporting hardware.

 **CAUTION:** Installing system components in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack.

 **CAUTION:** After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and injure someone.

 **NOTE:** Your system is safety-certified as a free-standing unit and as a component for use in a rack cabinet using the customer rack kit when both the rack cabinet and rack kit were designed for your system. The installation of your system and rack kit in any other rack cabinet has not been approved by any safety agencies. It is your responsibility to have the final combination of system and rack kit in a cabinet evaluated for suitability by a certified safety agency. The manufacturer disclaims all warranties and liability in connection with such combinations.

- System rack kits are intended to be installed in an approved rack by trained service technicians. If you install the kit in any other rack, be sure that the rack meets the specifications.

 **CAUTION:** Do not move large racks by yourself. Due to the height and weight of the rack, it is recommended that a minimum of two people perform this task.

- Before working on the rack, make sure that the stabilizers are secured to the rack, extend to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.

- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a component from the rack.
- Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.
- After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.
- Do not overload the power supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Ensure that proper airflow is provided to components in the rack.
- Do not step on or stand on any system/component when servicing other systems/components in a rack.

## Installation Instructions

This installation guide provides instructions for trained service technicians installing one or more systems in an open-frame relay rack or in a rack cabinet. The Dell™ RapidRails™ rack kit can be installed in all the manufacturer's rack cabinets without tools, and the VersaRails™ rack kit can be installed in most industry-standard rack cabinets. The procedures for installing both RapidRails and VersaRails rack kits are similar. One rack kit is required for each system installed in the rack.



**CAUTION:** Do not install rack kit components designed for another system. Use only the rack kit for your Dell system. Using the rack kit for another system may result in damage to the system and personal injury.



**NOTE:** If your Dell system is a tower version, you must install a tower-to-rack kit. Instructions for installing this kit are included in this document.

The RapidRails rack kit can be installed in any Dell rack cabinet and in most industry-standard rack cabinets.




**NOTICE:** The VersaRails rack kit is intended to be installed by trained service technicians in a rack that meets the specifications of American National Standards Institute (ANSI)/Electronic Industries Association (EIA) standard ANSI/EIA-310-D-92, International Electrotechnical Commission (IEC) 297, and Deutsche Industrie Norm (DIN) 41494. One rack kit is required for each system that is installed in a rack.

## Before You Begin


Before you begin installing your system in the rack, carefully read "Safety Instructions," found earlier in this guide, as well as the safety instructions found in your *System Information* document for additional information.

 **CAUTION:** When installing multiple systems in a rack, complete all of the procedures for the current system before attempting to install the next system.


 **CAUTION:** Rack cabinets can be extremely heavy and move easily on the casters. The cabinet has no brakes. Use extreme caution while moving the rack cabinet. Retract the leveling feet when relocating the rack cabinet. Avoid long or steep inclines or ramps where loss of cabinet control may occur. Extend the leveling feet for support and to prevent the cabinet from rolling.


## Important Safety Information

Observe the safety precautions in the following subsections when installing your system in the rack.

 **CAUTION:** You must strictly follow the procedures in this document to protect yourself as well as others who may be involved. Your system may be very large and heavy, and proper preparation and planning are important to prevent injury to yourself and to others. This becomes increasingly important when systems are installed high up in the rack.

## Rack Stabilizer Feet

 **CAUTION:** Installing systems in a rack without the front and side stabilizer feet installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizer feet before installing components in the rack.

 **CAUTION:** After installing systems in a rack, never pull more than one system out of the rack on its slide assemblies at one time. The weight of more than one extended system could cause the rack to tip over and cause injury.

The stabilizer feet help prevent the rack from tipping over when a system or other component is pulled out of the rack with the slide assemblies fully extended. See the documentation provided with the rack cabinet for instructions on installing and anchoring the stabilizer feet.



## Installation Tasks

Installing a rack kit involves performing the following tasks in their numbered order:

- 1** Removing the rack doors
- 2** Marking the rack
- 3** Installing the rail assemblies in the rack:
  - RapidRails installation
  - VersaRails installation
- 4** Installing the system in the rack
- 5** Installing the cable-management arm
- 6** Routing cables
- 7** Replacing the rack doors

## Recommended Tools and Supplies

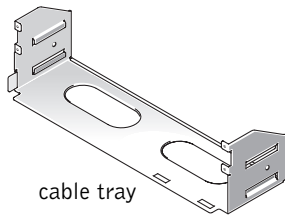
- A #2 Phillips screwdriver
- A T-10 Torx driver (if installing the tower-to-rack kit)
- Masking tape or a felt-tip pen, for use in marking the mounting holes to be used
- A measuring ruler or tape measure

## RapidRails Rack Kit Contents

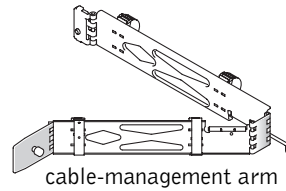
The RapidRails rack kit includes the following items (see Figure 1-1):

- One pair of RapidRails slide assemblies
- One cable-management arm
- One cable tray
- Four 6-32 x 0.25-inch hex-head Phillips screws

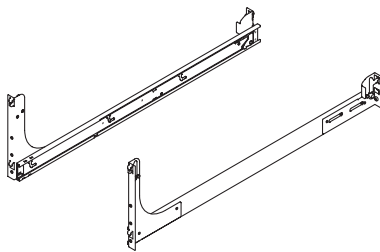
**Figure 1-1. RapidRails Rack Kit Contents**



cable tray



cable-management arm



RapidRails slide assemblies



6-32 x 0.25-inch hex-head  
Phillips screws (4)

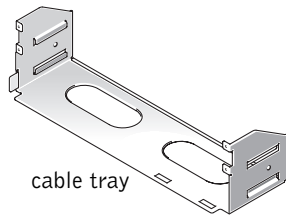
## VersaRails Rack Kit Contents

The VersaRails rack kit includes the following items (see Figure 1-2):

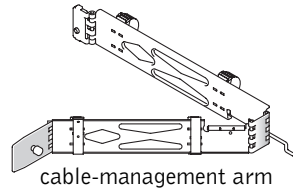
- One pair of VersaRails slide assemblies
- One cable-management arm
- One cable tray
- Ten 10-32 x 0.5-inch flange-head Phillips screws
- Four 6-32 x 0.25-inch hex-head Phillips screws



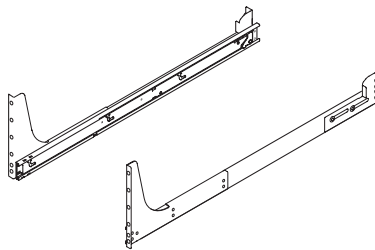
**NOTE:** The nonmetric screws described in illustrations and in procedural steps are identified by size and number of threads per inch. For example, a #10 Phillips-head screw with 32 threads per inch is identified as a 10-32 screw.

**Figure 1-2. VersaRails Rack Kit Contents**

cable tray



cable-management arm



VersaRails slide assemblies

6-32 x 0.25-inch hex-head  
Phillips screws (4)10-32 x 0.5-inch flange-  
head Phillips screws (10)

## Removing the Rack Doors

See the procedures for removing doors in the documentation provided with your rack cabinet.

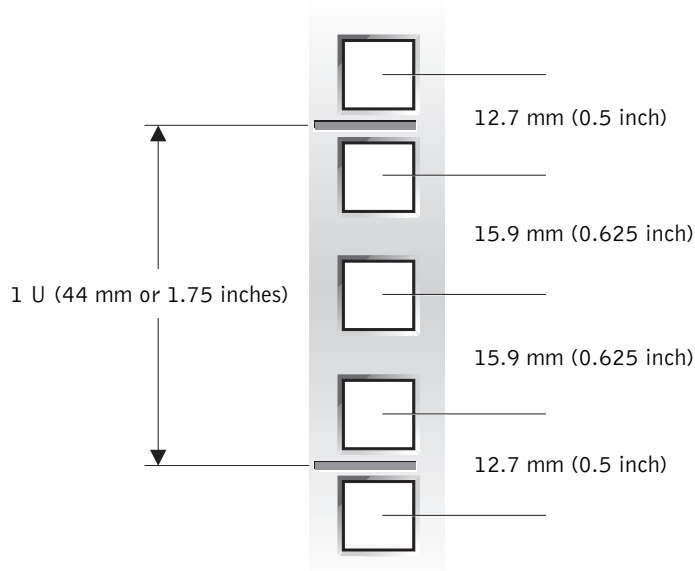
**⚠ CAUTION:** Because of the size and weight of the rack cabinet doors, never attempt to remove or install them by yourself.

**⚠ CAUTION:** Store the two doors where they will not injure someone if the doors accidentally fall over.

# Marking the Rack

You must allow 5 U (8.75 inches) of vertical space for each system you install in the rack (see Figure 1-3).

**Figure 1-3. One Rack Unit**



**CAUTION:** If you are installing more than one system, install the slide assemblies so that the first system is installed in the lowest available position in the rack.

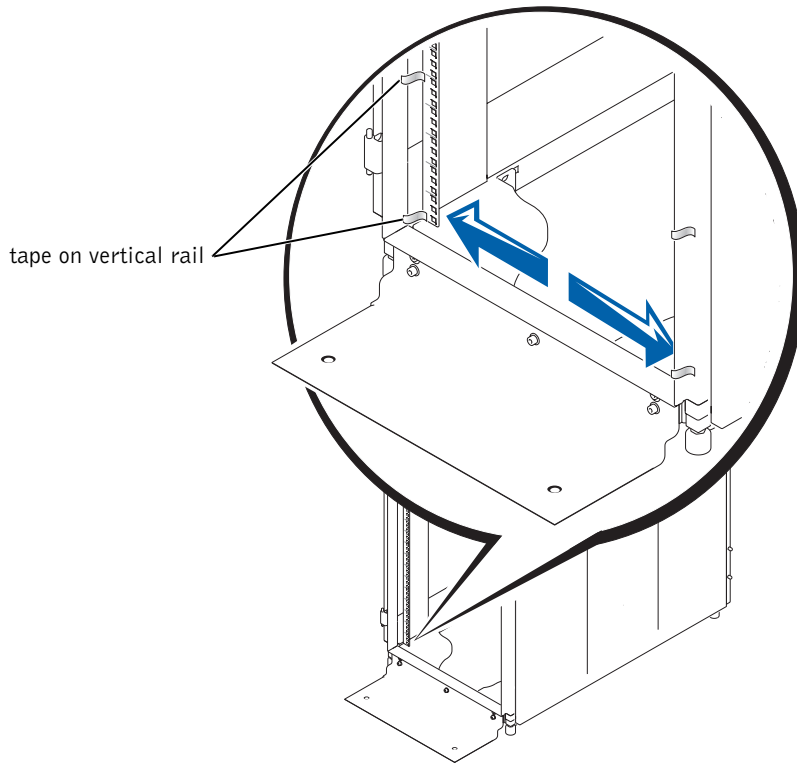
To mark the rack, perform the following steps:

- 1 Place a mark on the rack's front vertical rails where you want to locate the bottom of the system you are installing in the rack cabinet.

The bottom of each 1-U space is at the middle of the narrowest metal area between holes (marked with a horizontal line on some rack cabinets—see Figure 1-4).

Place a mark approximately 8.75 inches above the original mark you made (or count up 15 holes in a rack that meets EIA-310 standards) and mark the rack's front vertical rails with a felt-tipped pen or masking tape (if you counted holes, place a mark just above the top hole). This mark or piece of tape indicates where the system's upper edge will be located on the vertical rails (see Figure 1-4).

**Figure 1-4. Marking the Vertical Rails**



## Installing the RapidRails Slide Assemblies

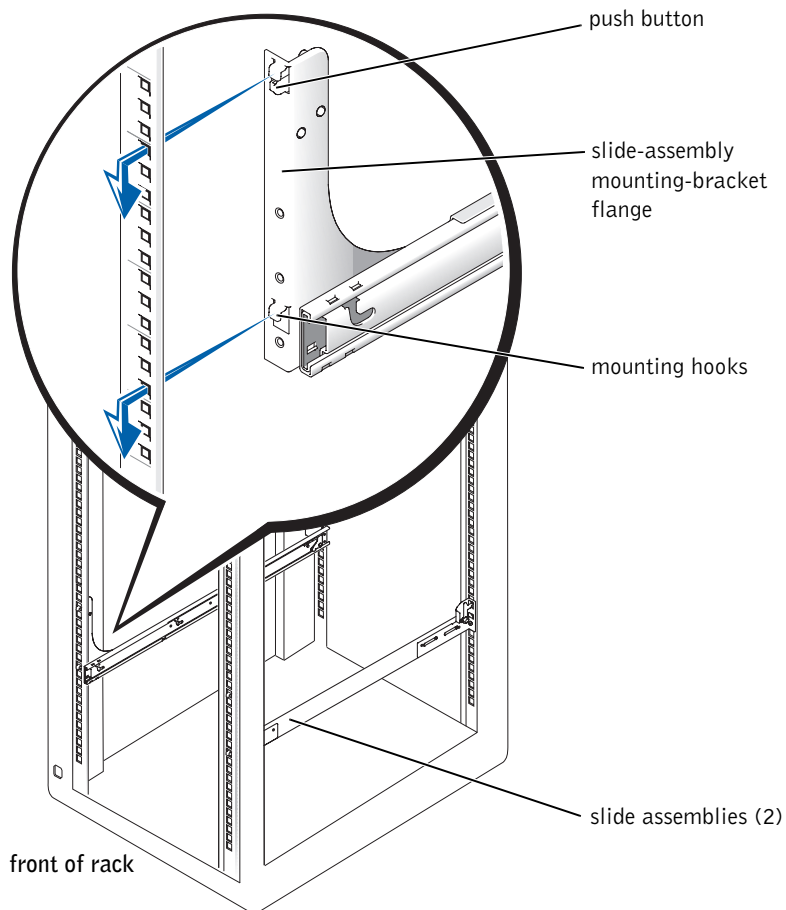
- 1 At the front of the rack cabinet, position one of the RapidRails slide assemblies so that its mounting-bracket flange fits between the marks or tape you placed on the rack (see Figure 1-5).

The top mounting hook on the rail assembly's front-mounting bracket flange should enter the top hole between the marks you made on the vertical rails.

- 2 Push the slide assembly forward until the top mounting hook enters the square hole just below the upper marks or tape you placed on the vertical rail. Next, push down on the mounting-bracket flange until the mounting hooks seat in the square holes and the push button pops out and clicks (see Figure 1-5).

- 3 At the back of the cabinet, pull back on the mounting-bracket flange until the top mounting hook is in the top square hole, and then push down on the flange until the mounting hooks seat in the square holes and the push button pops out and clicks.
- 4 Repeat steps 1 through 3 for the slide assembly on the other side of the rack.
- 5 Ensure that the rails are mounted at the same vertical position on both sides of the rack.

**Figure 1-5. Installing the RapidRails Slide Assemblies**



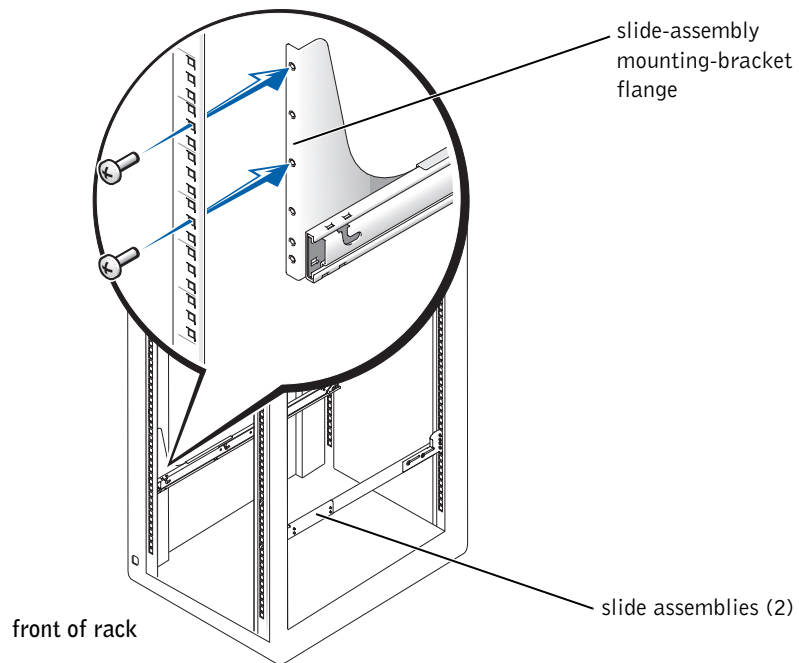
## Installing the VersaRails Slide Assemblies

- 1 At the front of the rack cabinet, place a VersaRails slide assembly so that its mounting-bracket flange fits between the marks or tape (or numbered location) on the rack (see Figure 1-6).

The four holes on the front of the mounting bracket should align with four of the holes between the marks you made on the front vertical rail.


- 2 Install two 10-32 x 0.5-inch flange-head Phillips screws in the mounting flange's top hole and the third-from-top hole (see Figure 1-6).
- 3 At the back of the cabinet, pull back on the mounting-bracket flange until the mounting holes align with their respective holes on the back vertical rail.
- 4 Install two 10-32 x 0.5-inch flange-head Phillips screws in the back mounting flange's top and third-from-top holes to secure the slide assembly to the back vertical rail.
- 5 Repeat steps 1 through 4 for the slide assembly on the other side of the rack.
- 6 Ensure that the slide assemblies are mounted at the same position on the vertical rails on each side of the rack.


**Figure 1-6. Installing the VersaRails Rail Assemblies**



# Installing the Tower-to-Rack Kit

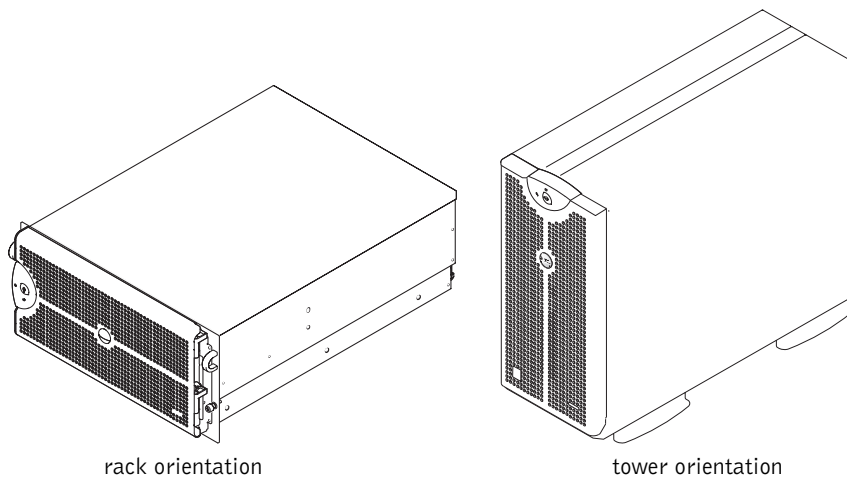
 **NOTE:** If you ordered the tower-to-rack conversion kit, install the kit at this time.

 **NOTE:** If you have a rack-only version of the system, skip this procedure and proceed to "Installing the System in the Rack."

 **CAUTION:** The system may weigh up to 43 kilograms (95 pounds) when fully loaded. To prevent personal injury, do not attempt to move the system by yourself.

The rack version and the tower version system are shown in Figure 1-7.

**Figure 1-7. Rack and Tower Version Systems**



The tower-to-rack kit includes the following items:

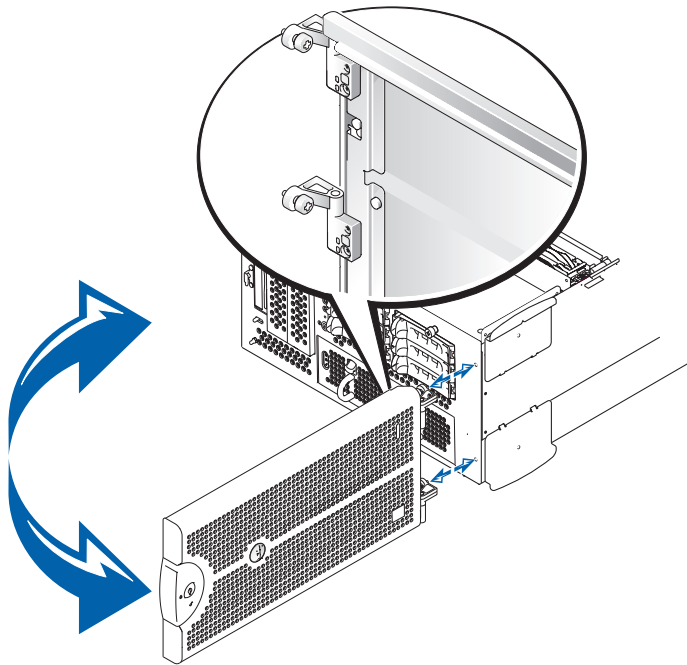
- One rack front panel with rack handles and thumbscrews
- One rack bezel, complete with keylock, keys, and attaching hardware
- Six 10-32 shoulder screws
- Six #10 flat washers



## Removing the Bezel, Feet, Cover, Side Panel, and Front Panel

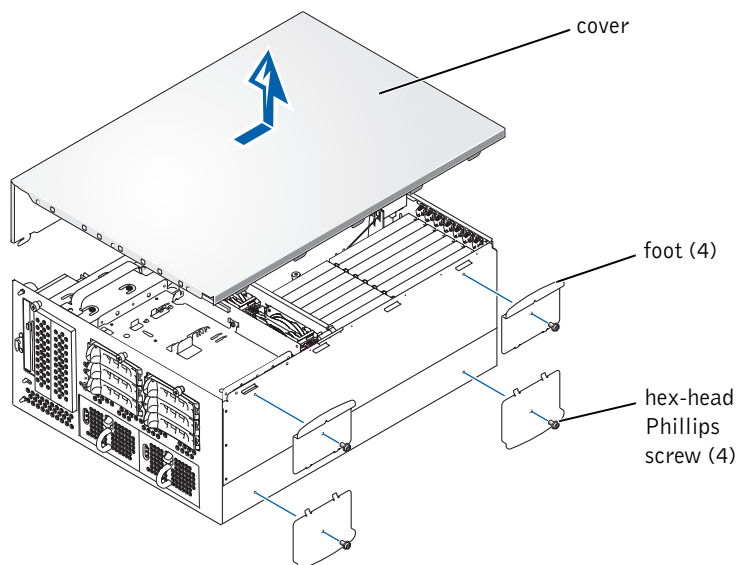
- 1 To remove the bezel with the system laying on its left side, perform the following steps:
  - a Using the system key, unlock the front bezel.
  - b Swing the bezel away from the system until it is perpendicular to the system.
  - c Using a #2 Phillips screwdriver, loosen the thumbscrews to release the bezel and set it aside (see Figure 1-8).

**Figure 1-8. Removing the Front Bezel**



- 2 Remove the four metal feet from the system:
  - a Using a #2 Phillips screwdriver or a 1/4-inch nut driver, remove the screw that secures each metal foot.
  - b Pull each foot from the chassis (see Figure 1-9).
- 3 Remove the system cover and set it aside (see Figure 1-9):
  - a Loosen the three thumbscrews on the front of the system.

**Figure 1-9. Removing the Feet and the System Cover**



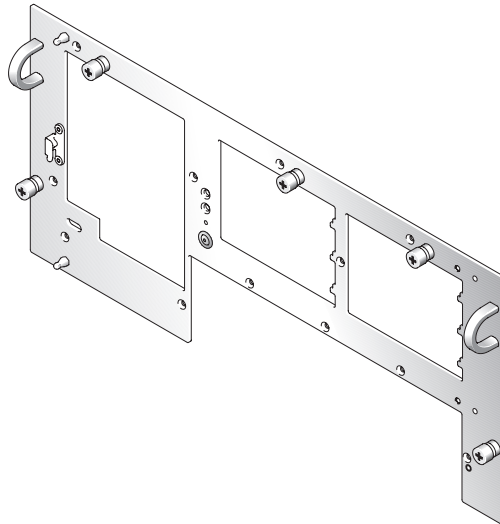
- b** Slide the system cover back and grasp the cover at both ends.
  - c** Carefully lift the cover away from the system and set it aside.
- 4** Remove the cosmetic trim panels on the left side of the chassis:
  - a** Remove the seven T-10 Torx screws from the top, left, and bottom edge of the front panel.  
These seven screws secure the cosmetic trim panel to the front panel and chassis.
  - b** Slide the cosmetic trim panel about 0.5 inch toward the back of the chassis and lift it away.
- 5** Remove the 12 remaining T-10 Torx screws that secure the tower front panel to the chassis.
- 6** Lift the front panel away and set it aside, out of the way.

## Installing the Rack Front Panel and Bezel

- 1** Install the rack front panel on the chassis, securing it with 13 of the Torx screws you removed in the previous procedure (see Figure 1-10).

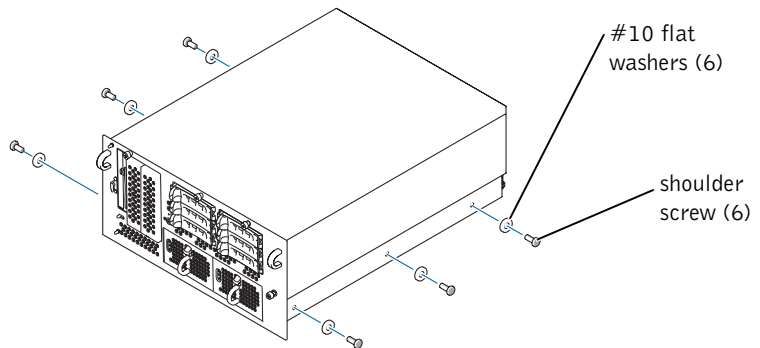
Notice that the rack front panel is wider than the tower front panel and has handles and thumbscrews for the front vertical rails.

**Figure 1-10. Installing the Rack Front Panel**



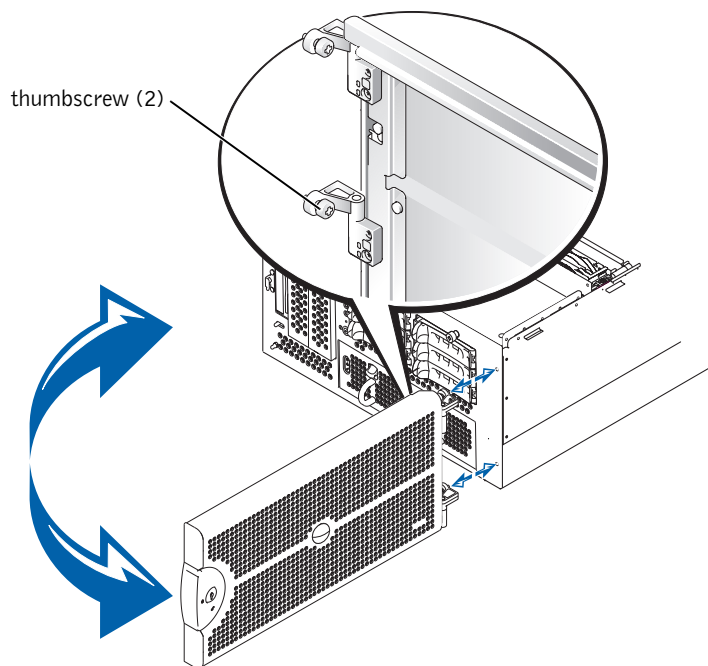
- 2 Install three 10-32 shoulder screws and three #10 flat washers on each side of the chassis (see Figure 1-11).

**Figure 1-11. Installing Shoulder Screws and Washers**



- 3 Install the new rack bezel:
  - a Position the bezel so that its hinged mounting bracket thumbscrews are aligned with the holes in the system front panel (see Figure 1-12).
  - b Secure the thumbscrews to the front panel with a Phillips screwdriver.

**Figure 1-12. Installing the Rack Bezel**



- 4 Reinstall the hard drives in their slots in the drive bay, if they were removed to lighten the chassis (see your *Installation and Troubleshooting Guide* for instructions).
- 5 Install the power supplies and the microprocessor tray, if they were removed to lighten the chassis.
- 6 Close the bezel.
- 7 Replace the system cover.

## Installing the System in the Rack

**⚠ CAUTION:** If you are installing more than one system, install the first system in the lowest available position in the rack.

**⚠ CAUTION:** Never pull more than one component out of the rack at a time.

- 1 Pull the two interior slide assemblies out of the rack until they lock in the fully-extended position.

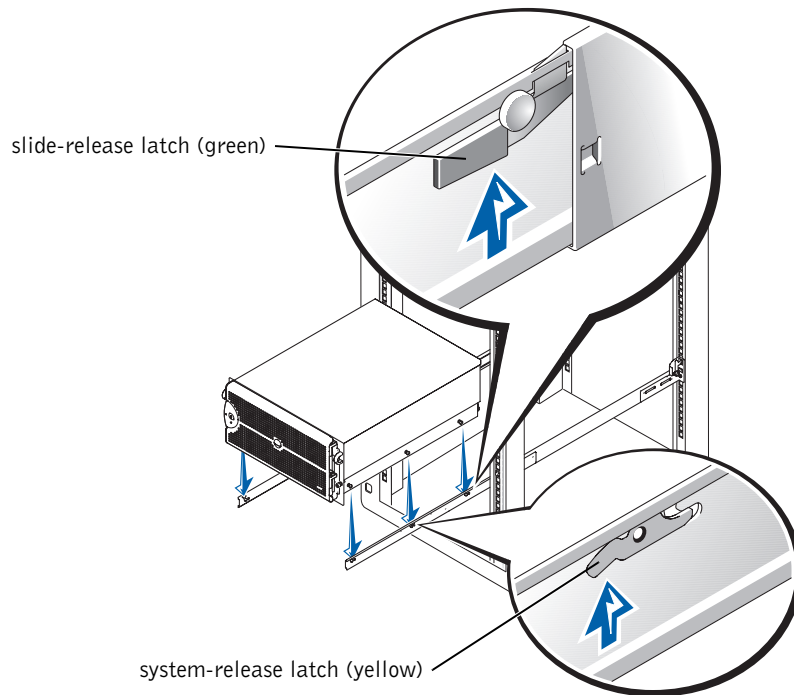
**⚠ CAUTION:** Because of the size and weight of the system, never attempt to install the system in the slide assemblies by yourself.

- 2 Lift the system into position.

Using a minimum of two persons, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.

- 3 Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back slots on the slide assemblies (see Figure 1-13).

**Figure 1-13. Installing the System in the Rack**



- 4 Engage the back shoulder screws in the slot just behind the green slide-release latch, followed by the middle and front shoulder screws.
- 5 Push the system inward on the slide assemblies until the yellow system-release latch clicks into place, locking the slide to the system's middle shoulder screw (see Figure 1-13).
- 6 Pull up on the green slide-release latches and push the system into the rack.
- 7 Tighten the thumbscrews on the rack front panel.

# Installing the Cable-Management Arm

This procedure is performed in two phases. First, install the cable tray into the back of the system chassis. Next, install the cable-management arm on either side of the cable tray.

## Installing the Cable Tray

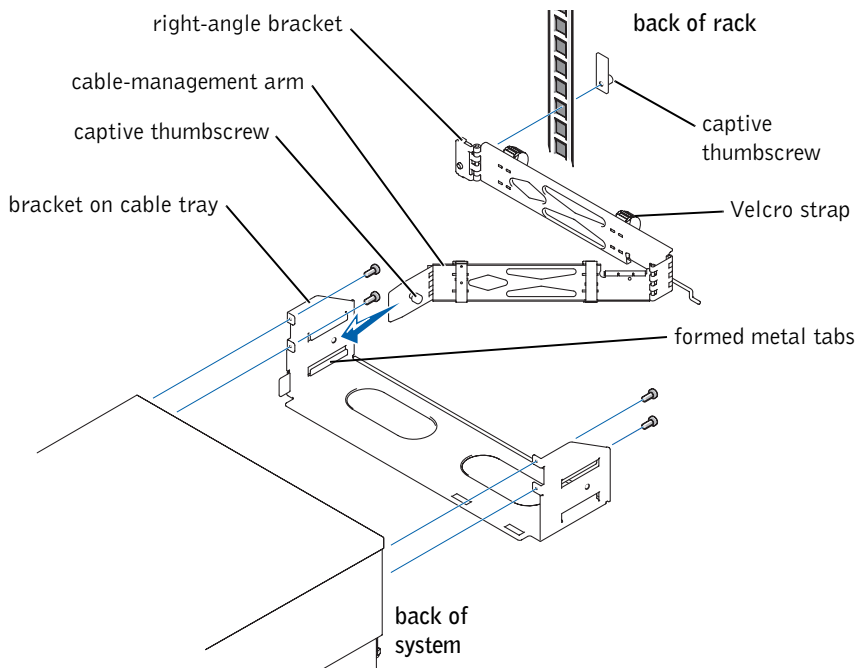
Attach the cable tray to the system chassis using four 6-32 x 0.25-inch hex-head Phillips screws (see Figure 1-14).

**CAUTION:** The cable tray cannot support the weight of the system. Do not grasp the cable tray when lifting the system. Lift the system only by the chassis edges.

## Securing the Cable-Management Arm

- 1 Facing the back of the rack cabinet, attach the right-angle bracket on the cable-management arm to the cabinet's back vertical rail and secure it with the captive thumbscrews (see Figure 1-14). The bracket clamps into the square mounting holes on the vertical rail.

**Figure 1-14. Installing the Cable-Management Arm**



- 2 Slide the unattached end of the cable-management arm into the slotted pocket made by the formed metal tabs on the side of the cable tray.
- 3 Secure the cable-management arm in its slotted pocket with the captive thumbscrew.

## Routing Cables

- 1 Attach the I/O and power cables to their connectors on the back of the system.  
For details, see your system's *Installation and Troubleshooting Guide* and *User's Guide*.
- 2 Secure all of the cables to the cable-management arm:
  - a Loosen the thumbscrews that secure the front panel of the system to the front vertical rail.
  - b Slide the system forward to the fully-extended position.
  - c Route the cables along the cable-management arm, allowing slack in the cables at the hinge positions, and secure the cables to the cable-management arm with the Velcro straps attached to the cable-management arm (see Figure 1-14).
- 3 Slide the system in-and-out of the rack to verify that the cables are routed correctly and do not bind, stretch, or pinch with the movement of the cable-management arm.**NOTE:** As you pull the system out to its fully-extended position, the slide assemblies will lock in the extended position. To push the system back into the rack, press the green slide-release latch on the side of each slide to release the locks, and then slide the system completely into the rack.
- 4 Tighten the thumbscrews that you loosened in step 2a.

## Replacing the Rack Doors

See the procedures for replacing doors in the documentation provided with your 24-U and 42-U rack cabinets.

This completes the rack installation of your system.

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