



Sun Fire™ V890 Server Rackmounting Guide

Sun Microsystems, Inc.
www.sun.com

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Preface

The *Sun Fire V890 Server Rackmounting Guide* provides instructions for installing the Sun Fire™ V890 server into an EIA-compliant 19-inch or 31.5-inch cabinet, or into the Sun Rack 900 cabinet.

After you install the server into the cabinet, consult the *Sun Fire V890 Server Owner's Guide* for information about connecting the power cords, network cables, and I/O interface cables and installing the Solaris Operating System software.

How This Book Is Organized

The chapters in this book are organized as follows:

Chapter 1 describes the contents of the rackmounting kit.

Chapter 2 provides step-by-step instructions for installing the server into an EIA-compliant 19-inch cabinet.

Chapter 3 describes how to install the server into a Sun Rack 900 cabinet.

Chapter 4 describes the procedure for installing the server into a 31.5-inch cabinet, such as the Sun Fire Expansion Cabinet.

Appendix A lists the requirements of a 19-inch cabinet used to rackmount the server.

Appendix B shows the specifications of the Sun Rack 900 cabinet.

Related Documentation

Application	Title
Configuration and setup	<i>Sun Fire V890 Server Owner's Guide</i>
Parts replacement and service	<i>Sun Fire V890 Server Service Manual</i>

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Getting Started

This guide shows you how to install the Sun Fire V890 server into a rack or cabinet. After you install the server into the cabinet according to the instructions in this guide, see the *Sun Fire V890 Server Owner's Guide* for information about system setup and software installation.

To install the server into a cabinet, complete the following tasks:

- Unpack and verify the contents of the rackmounting kit. See [“Unpacking the Kit” on page 1](#) and [“Inventory” on page 2](#).
- Install the server into the cabinet.
 - To install the server into an Electronic Industries Association (EIA)-compliant 19-inch (48.26-cm) wide cabinet, see [Chapter 2](#).
 - To install the server into a Sun Rack 900 cabinet, see [Chapter 3](#).
 - To install the server into a 31.5-inch (80-cm) cabinet, such as the Sun Fire Expansion Cabinet, see [Chapter 4](#).

Note – To illustrate the procedures, this guide shows the server being installed into a Sun Microsystems™ cabinet.

Unpacking the Kit

The rackmounting kit is shipped from the factory in one carton.

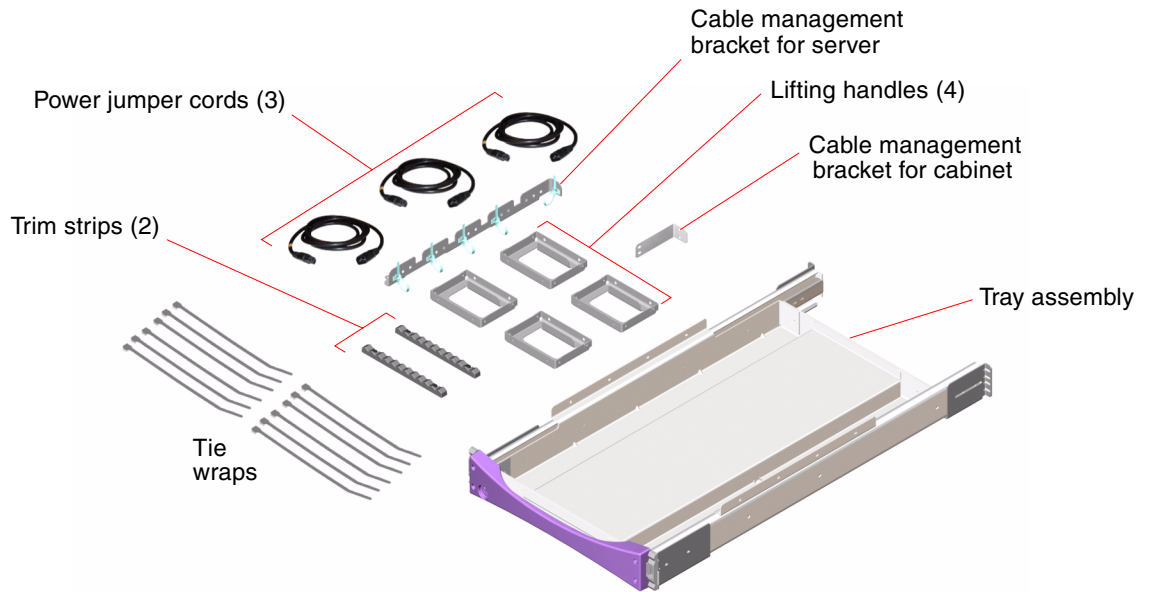
Inspect the shipping carton for physical damage. If the carton is damaged, request that the carrier's agent be present when the carton is opened. Keep all contents and packing material for the agent's inspection.

Check the list in the following section to make sure that you received the complete kit. Contact Sun Microsystems or your distributor/reseller if any parts are missing.

Inventory

You will need one rackmounting kit for each Sun Fire V890 server you intend to install into a cabinet. Each rackmounting kit contains the following parts:

- Tray assembly
- Cable management bracket for the server (EIA-compliant rack kit only)
- Cable management bracket for the cabinet (EIA-compliant rack kit only)
- Short rear brackets (2) (EIA-compliant rack kit only; in a bag labeled 560-2682-01)
- Power jumper cords (3)
- Lifting handles (4)
- Trim strips (2)
- Tie wraps
- Screws
- *Sun Fire V890 Server Rackmounting Guide* (this document)



The kit contains a plastic bag holding 10-32 screws (black in color) and M4 screws. You will use these screws to install the tray assembly and server into the cabinet.

The following figure shows the screws at actual size.



10-32 screw
(Black in color)



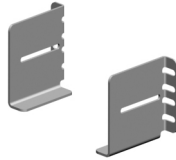
M4 screw

Any screws not used in the rack installation are spares.

Note – Bar nuts are required (but not included) for non-threaded cabinets. See the cabinet instructions for more information.

If you have an EIA-compliant rackmounting kit, you will also have two short rear brackets included in your kit. These rear brackets are for installing the Sun Fire V890 server into a 31.5-inch (80-cm) depth (rail-to-rail) cabinet, such as the Sun Fire Expansion Cabinet. The short rear brackets are in a bag labeled 560-2682-01 in the rackmounting kit.

The following illustration shows the additional short rear brackets.



Note – You can install only one Sun Fire V890 server into a Sun Fire Expansion Cabinet.

What Next

To install the server into a 19-inch (48.26-cm) wide cabinet, go to [Chapter 2](#) and complete the installation procedure.

To install the server into a Sun Rack 900 cabinet, go to [Chapter 3](#) and complete the installation procedure.

To install the server into a 31.5-inch (80-cm) cabinet, such as the Sun Fire Expansion Cabinet, go to [Chapter 4](#) and complete the installation procedure.

Installing the Server Into a 19-Inch Cabinet

This chapter provides step-by-step instructions for installing the Sun Fire V890 server into a 19-inch (48.26-cm) wide EIA-compliant cabinet.

To install a Sun Fire V890 server into the cabinet, complete the following tasks in the order listed:

- Make sure you have completed the prerequisite tasks. See [“Before You Begin” on page 6](#).
- Prepare the server. See [“Preparing the Server” on page 8](#).
- Prepare the cabinet. See [“Preparing the Cabinet” on page 18](#).
- Install the tray assembly into the cabinet. See [“Installing the Tray Assembly Into the Cabinet” on page 18](#).
- Install the server into the tray assembly. See [“Installing the Server Into the Tray Assembly” on page 23](#).
- Make the server ready for operation. See [“Restoring the Server” on page 28](#).
- Secure the tray handle to the cabinet rails. See [“Securing the Server in the Cabinet” on page 28](#).
- Install the trim strips. See [“Installing Trim Strips” on page 30](#).
- Replace the front and back doors of the cabinet. See [“Restoring the Cabinet” on page 30](#).
- Develop the cable management scheme. See [“Managing Cables” on page 31](#).

Before You Begin

Before you begin the installation procedures, complete the following tasks:

- Verify that your cabinet meets the requirements described in [Appendix A](#).
- Check “[Safety and System Performance Cautions](#)” on page 6 and make sure your installation plan reflects the measures described.
- Check the documentation provided with your cabinet and make sure your installation plan reflects the cautionary measures described.
- Unpack the rackmounting kit and verify that you have all the components and hardware described in “[Inventory](#)” on page 2.
- Gather the required tools. See “[Tools, Equipment, and Documentation Required](#)” on page 8.

Safety and System Performance Cautions

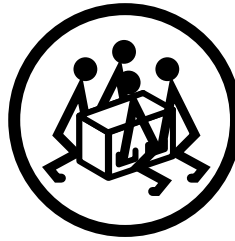
Adhere to the following cautions when installing a Sun Fire V890 server into a cabinet. For a complete description of the safety cautions to follow when installing a server, see the *Sun Fire V890 Server Owner's Guide*.



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.



Caution – Do not attempt to lift the server until a qualified service technician removes all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server. See [“Preparing the Server” on page 8](#) for information about removing these components.



Caution – Be sure the cabinet is stabilized so that it cannot move or tip forward when one or more systems or devices are fully extended from the front of the cabinet. The cabinet must be bolted securely to the floor or equipped with a sturdy and extendable anti-tip leg. If there are feet beneath the cabinet to prevent it from rolling, be sure the feet are fully extended downward to the floor. See the instructions provided with the cabinet.



Caution – Install the server as low as possible in the cabinet. For best stability, do not install the server above equipment that weighs less than the server. If you will be installing two servers in a cabinet, install the lower server first.



Caution – To prevent the cabinet from tipping forward, do not attempt to roll or move the cabinet after installing the server in the cabinet.



Caution – For proper ventilation and cooling of the server, be sure the cabinet and the operating location comply with the requirements given in [Appendix A](#).

Tools, Equipment, and Documentation Required

The following tools, equipment, and documentation are required when rackmounting the server:

- Phillips No. 2 screwdriver
- Phillips No. 1 screwdriver
- Level
- Flat blade screwdriver
- Adjustable wrench
- Masking tape or felt tip pen
- Antistatic wrist strap
- Antistatic mat
- *Sun Fire V890 Server Owner's Guide*
- *Sun Fire V890 Server Service Manual*

Preparing the Server

To prepare the server for rackmounting, a qualified service technician should complete the following tasks:

- Power off the system and disconnect the server's power cords, network cables, and I/O cables. See the *Sun Fire V890 Server Service Manual* for instructions.
- Remove all power supplies, CPU/Memory boards, I/O fan trays, and CPU fan trays. See ["Remove Components" on page 9](#).
- Remove the side door handles. See ["Remove the Handle From Each Side Door" on page 10](#).
- Remove the fenders and lower side panels. See ["Remove the Fenders and Lower Side Panels" on page 13](#).
- Install the lifting handles. See ["Install the Lifting Handles" on page 15](#).
- Attach the cable management bracket to the back of the server. See ["Attach the Cable Management Bracket to the Server" on page 16](#).

Remove Components



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.

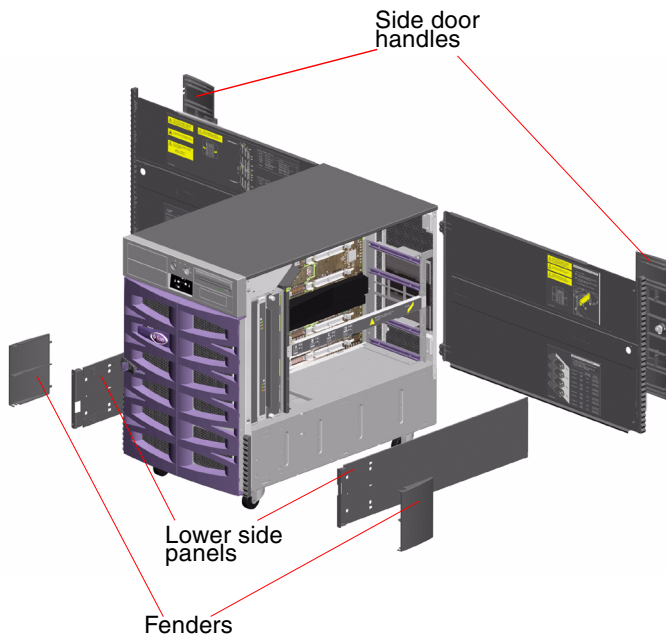
In order for four persons to lift the server safely, you must reduce the weight of the server before you attempt to install it into the cabinet. To reduce the weight of the server, a qualified service technician should remove the following components:

- All power supplies
- All CPU/Memory boards
- All CPU fan trays
- All I/O fan trays

See the *Sun Fire V890 Server Service Manual* for component removal procedures.

Overview of Parts to Be Removed From the Chassis

The following figure identifies the parts that a qualified service technician must remove from the chassis before you can install the server into the cabinet.



The following sections provide detailed information about removing each part.

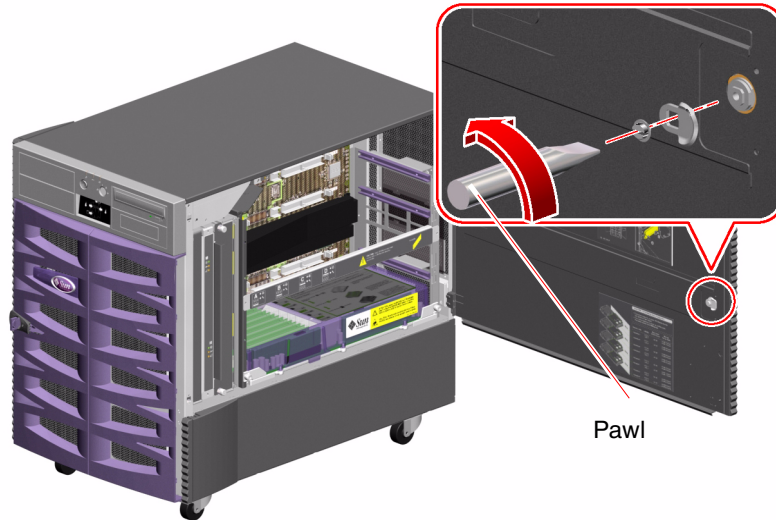
Remove the Handle From Each Side Door

1. Open one of the server's side doors.

Use the key provided with the server to unlock the door.

2. Remove the pawl from the side door.

On the inside of the door, remove the slot head screw from the center of the pawl.
Pull the pawl straight out to remove it.

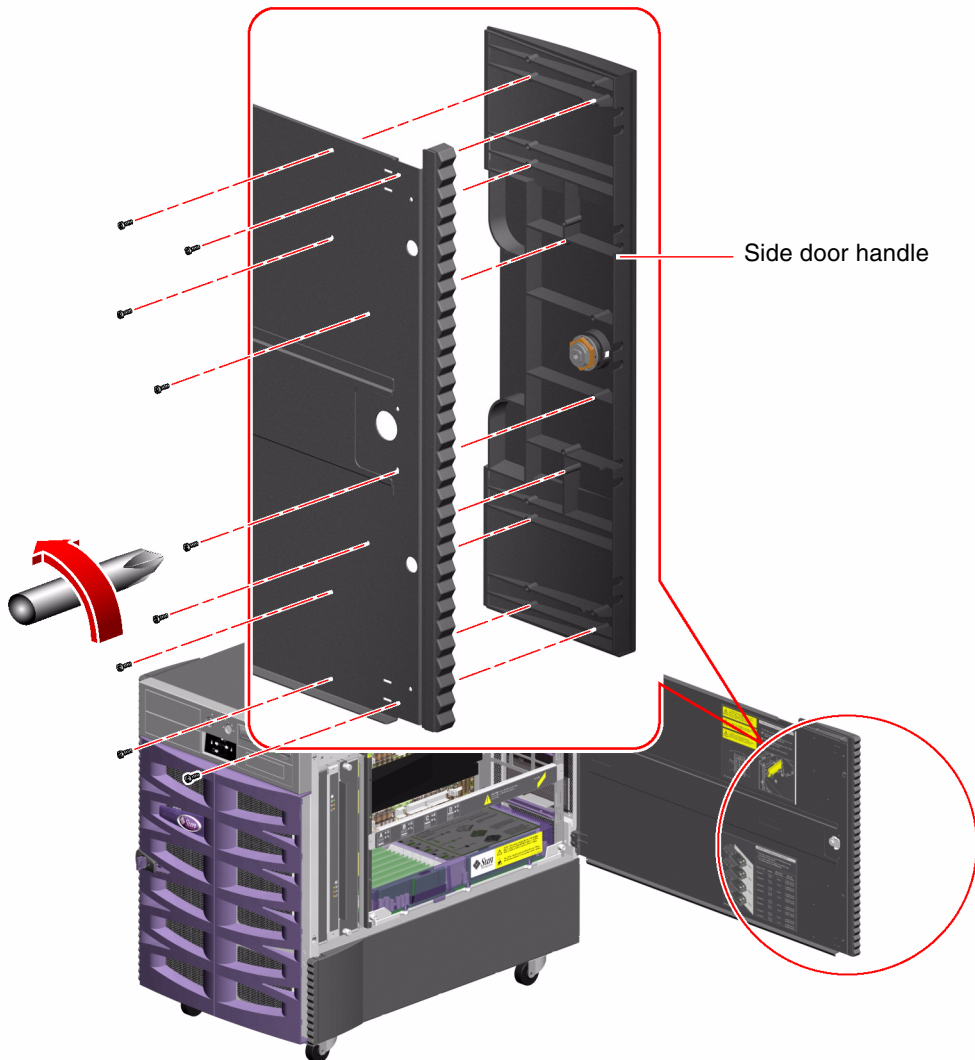


3. Remove the side door handle.

Remove the nine screws from the inside of the door.

From the outside of the door, pull the handle straight out to remove it.

Note – The lock remains in the handle.



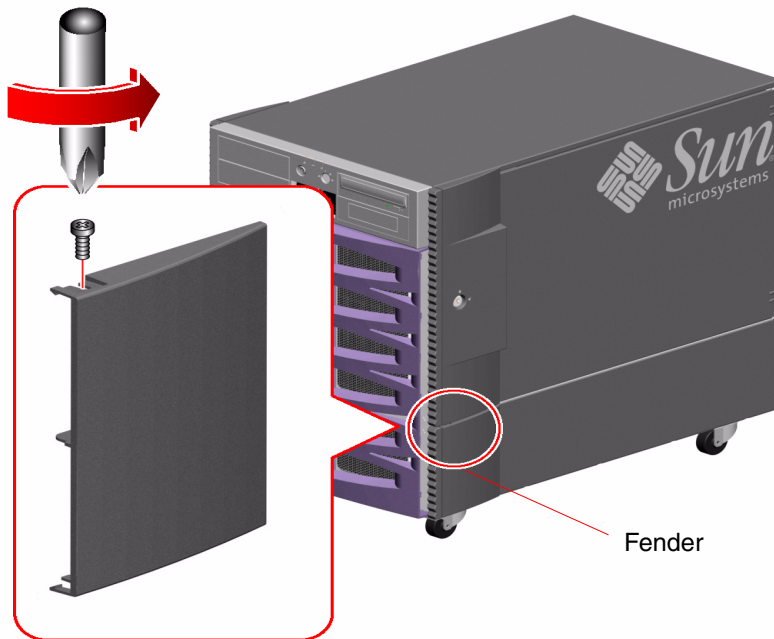
4. Repeat Steps 1 through 3 for the other side door.

5. Place the handles, pawls, and screws into the kit carton for safekeeping.

You will need to reinstall these parts if you reconfigure the server as a deskside unit.

Remove the Fenders and Lower Side Panels

1. Remove the fender from the front of each of the lower side panels.
 - a. Remove the screw from the top of the fender.

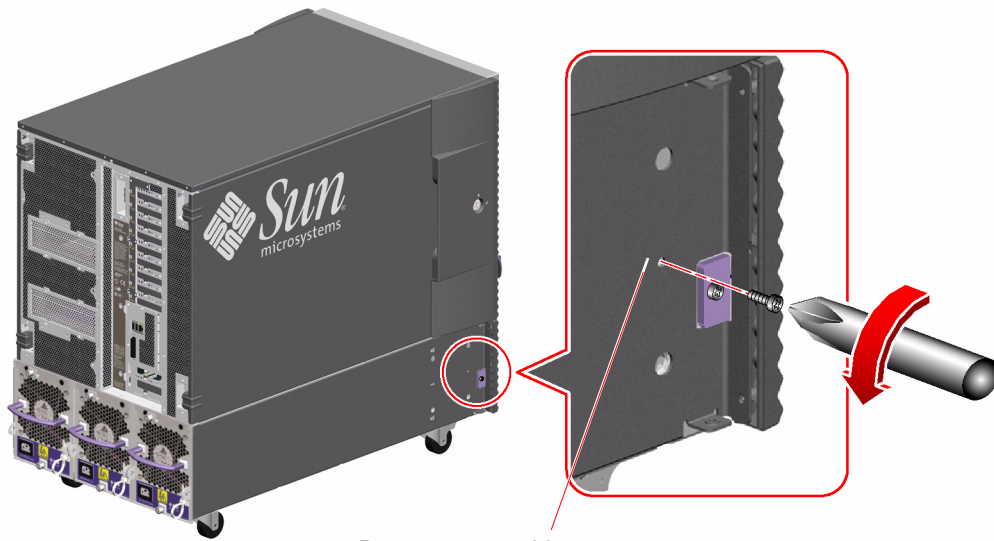


- b. Grasp the top and bottom edges of the fender and carefully flex the fender to remove it.
 - c. Repeat Steps a and b to remove the fender from the other lower side panel.

2. Remove the lower side panel from the left side of the server.

Remove the screw located approximately 3 inches (8 cm) from the front of the lower side panel.

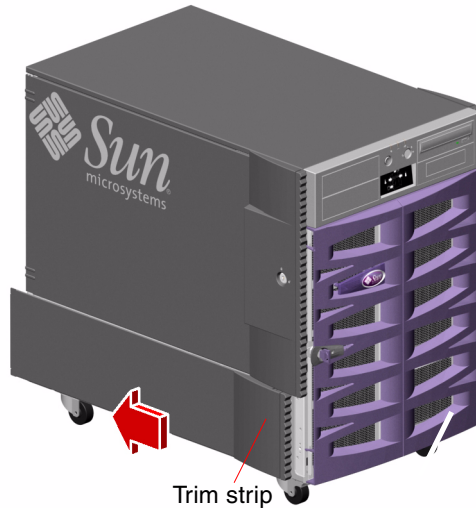
Note – On the left side of the server, do not remove the screw that attaches the small bracket to the side of the server. Removing this screw prevents the front door from closing securely.



Do not remove this screw.

3. Grasp the trim strip and slide the lower side panel toward the rear of the server.

The lower side panel should disengage as you slide the panel so that you can easily remove it.

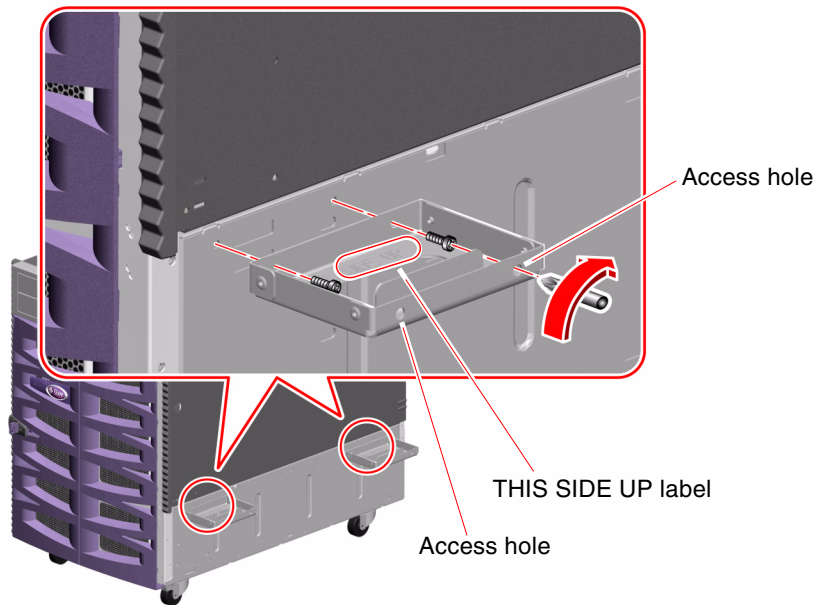


4. Repeat Steps 2 and 3 for the right lower side panel.
5. Place the fenders, lower side panels, and screws into the kit carton for safekeeping.
You will need to reinstall these parts if you reconfigure the server as a desktide unit.

Install the Lifting Handles

1. Locate the four lifting handles provided with the rackmounting kit.
2. Install two lifting handles on one side of the server using two M4 screws to attach each handle to the lower side of the server.
 - a. With the **THIS SIDE UP** label facing upward, insert the screwdriver through one of the access holes on the outside of the handle.
Using the access hole makes it easier to reach the screw hole on the inside of the handle.
 - b. Position the screw on the inside of the handle in the hole that is opposite the access hole.
 - c. Attach the handle to the server using the appropriate screw hole just below the server side door. See the following figure.
 - d. Finish installing the handle by repeating the procedure using the second access hole on the outside of the handle.

e. Repeat Steps a through d for the second handle.



3. Repeat Step 2 to install two handles on the other side of the server.

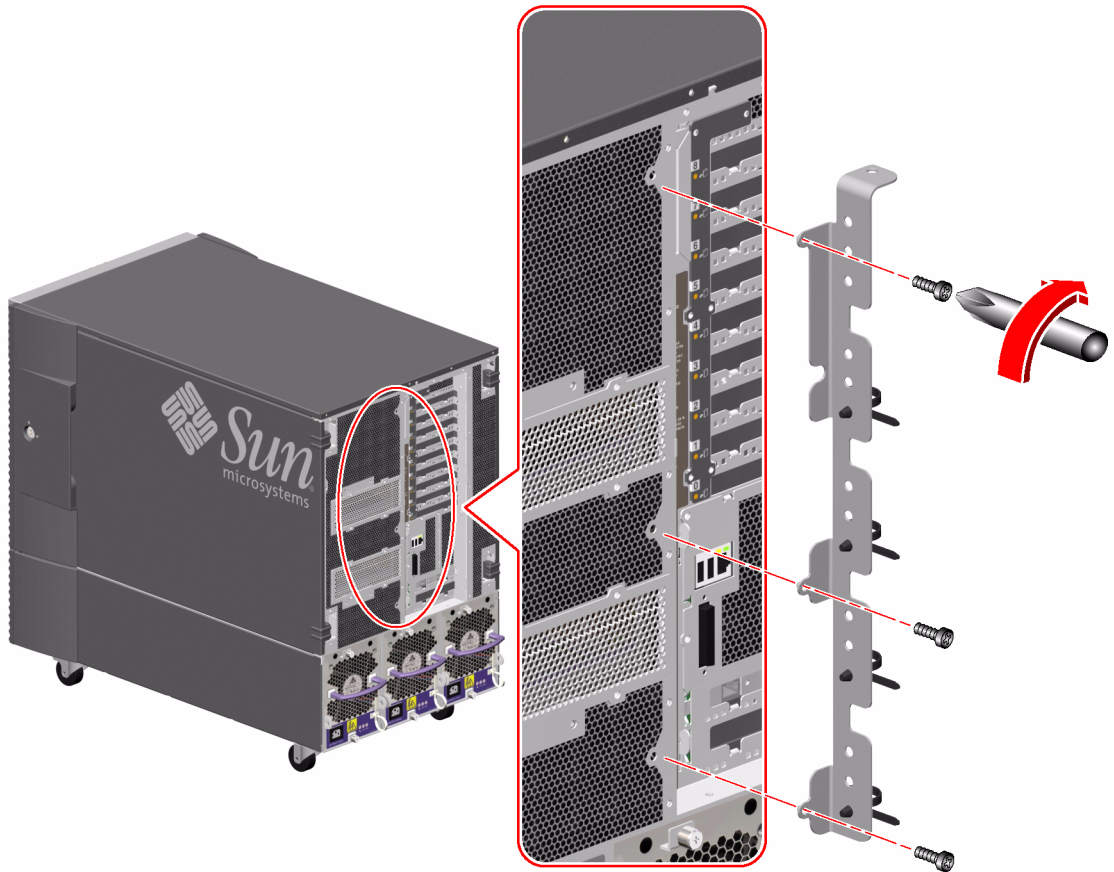
Attach the Cable Management Bracket to the Server

The cable management bracket that attaches to the back of the server provides strain relief for the cables. See [“Managing Cables” on page 31](#) for general cable management guidelines.

1. Locate the server cable management bracket provided with the rackmounting kit.

2. Attach the cable management bracket to the back of the server.

Attach the cable management bracket using three M4 screws as shown in the following figure.



Preparing the Cabinet

Make sure the operating location complies with the Sun Fire V890 server requirements and the cabinet requirements. See [Appendix A](#) of this guide and the cabinet documentation for information.

1. Be sure the cabinet is stabilized so that the cabinet cannot move or tip forward.

If there are feet beneath the cabinet to prevent it from rolling, be sure the feet are fully extended downward to the floor.

Stabilize the cabinet using the stabilizing mechanisms provided with the cabinet.

See the instructions provided with the cabinet.

2. Open the front and rear doors.

See the instructions provided with the cabinet.

3. Remove (if applicable) the front and rear doors and the side panels of the cabinet.

See the instructions provided with the cabinet.

Installing the Tray Assembly Into the Cabinet

To install the tray assembly into the cabinet, complete these tasks:

- If necessary, adjust the rear brackets on the tray assembly slides for the depth of the cabinet. See [“Adjust the Rear Brackets” on page 19](#)
- Determine the vertical position of the server in the cabinet. See [“Determine the Vertical Position of the Server in the Cabinet” on page 20](#).
- Attach the tray assembly to the cabinet rails. See [“Attach the Tray Assembly to the Cabinet” on page 21](#).

Adjust the Rear Brackets

1. Measure the depth of the cabinet.

Measure the depth of the cabinet from the outside face of the front rail to the outside face of the rear rail. The tray assembly and server can be installed into a 19-inch (48.26-cm) cabinet with a depth of at least 32 inches (81.3 cm) and not more than 36 inches (91.4 cm).

2. Measure the length of each slide.

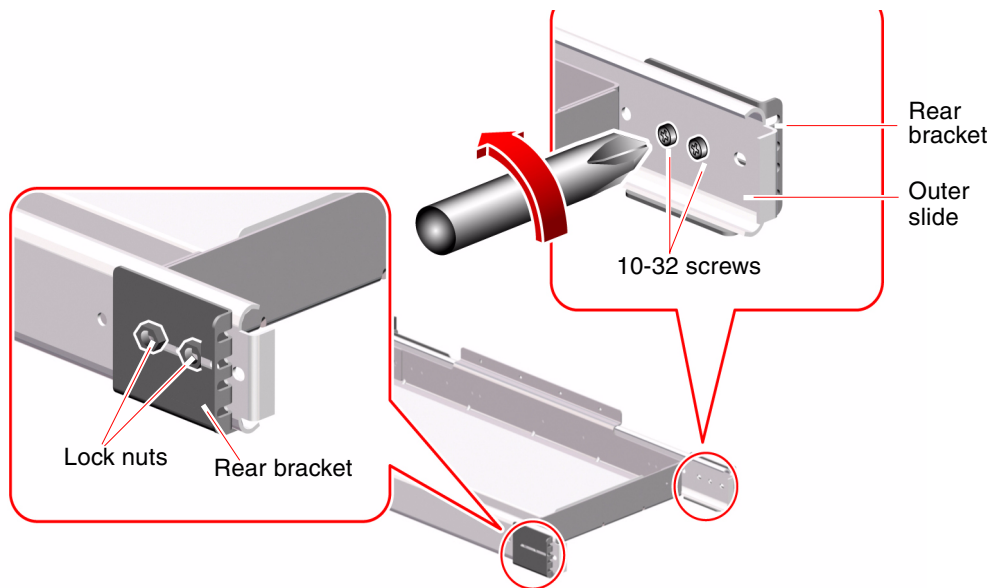
Measure the distance from the inside face of the front bracket to the inside face of the rear bracket. If this measurement is longer or shorter than the cabinet's depth, which you measured in Step 1, you must adjust the rear bracket on each slide to accommodate the depth of the cabinet.

3. If required, adjust the rear bracket on each slide.

a. Extend the tray assembly until you can see the two 10-32 screws located on the inside rear of each outer slide.

The screws on the inside of the outer slide (and the lock nuts on the outside of the bracket) secure the rear bracket to the outer slide.

b. Loosen the two 10-32 screws and the lock nuts.



- c. **Slide each rear bracket forward or backward as required to accommodate the depth of the cabinet.**

Slide each rear bracket and measure the distance from the inside face of the front bracket to the inside face of the rear bracket.

Continue to slide the rear bracket and measure the distance from the inside face of the front bracket to the inside face of the rear bracket until the measurement equals the depth of the cabinet, which you measured in Step 1.

Note – Four screw holes are provided in the outer slide. Depending on the cabinet depth, you may need to move one (or both) of the 10-32 screws to another of the four screw holes. Be sure to use both screws to secure each rear bracket to the outer slide.

- d. **Tighten the two 10-32 screws and lock nuts on each slide to resecure the rear brackets to the outer slides.**

Determine the Vertical Position of the Server in the Cabinet

Plan to install the tray assembly into the lowest available position in the cabinet. If you are installing two Sun Fire V890 servers into the cabinet, install the lower server first.

To determine the vertical position of the server, identify which cabinet rail holes to use for attaching the front and rear brackets by completing the following steps:

1. **Locate and mark the correct holes on the right and left front vertical cabinet rails.**

Make sure there is enough vertical space to install the server.

Note – Each Sun Fire V890 server requires 17 rack units (29.75 inches, 75.6 cm) or 51 holes on the vertical rails of the cabinet. A standard 72-inch (182.9 cm) high cabinet can accommodate two Sun Fire V890 servers.

If the Sun Fire V890 server will be installed immediately above a power sequencer, leave at least one free hole above the sequencer.

Using masking tape or a felt tip pen, mark the lowest available hole for installing the tray on the right front vertical rail of the cabinet. The second free hole is the lowest available hole if you are installing the Sun Fire V890 server immediately above a power sequencer.

Mark the matching hole on the left front rail of the cabinet. Count the holes to be sure you are using matching holes on the right and left rails of the cabinet.

2. **Locate and mark the corresponding holes on the right and left rear vertical cabinet rails.**

Using masking tape or a pen, mark the matching holes on the right and left rear vertical rails.

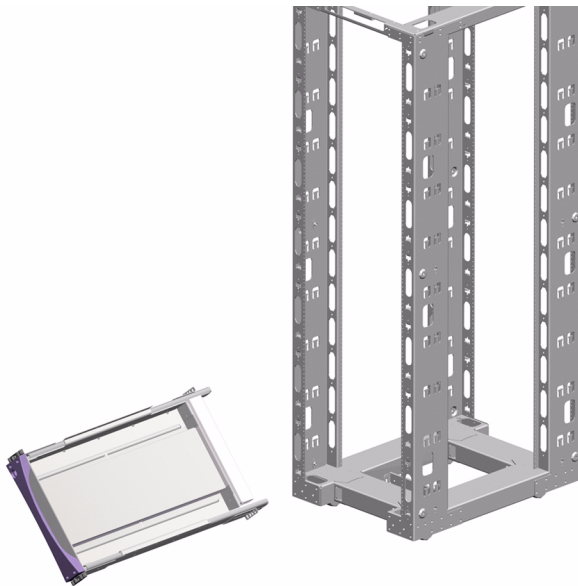
Count the holes to be sure you are using the holes that match the ones you marked in Step 1.

Attach the Tray Assembly to the Cabinet

Using the rail holes you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 20](#), attach the tray assembly to the cabinet by completing the following steps:

1. **Attach the front brackets on the slides of the tray assembly to the front rails of the cabinet.**
 - a. **With the help of an assistant, position the tray assembly on the inside of the cabinet with the front brackets at the front of the cabinet.**

To fit the tray assembly between the rails, you will need to tilt it by lowering one side of the assembly.



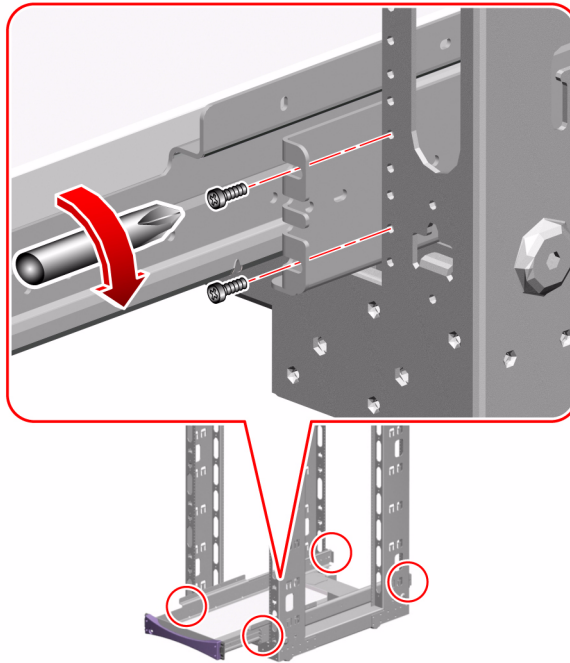
b. Attach the front brackets to the front rails of the cabinet using four 10-32 screws.

Align the lower hole of each front bracket with the front rail holes you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 20.](#)

Secure the front brackets using one 10-32 screw in the lower hole of each bracket. Finger-tighten the screws.

Align the upper hole of each front bracket with the corresponding hole in the cabinet rail. Secure the brackets to the rails using one 10-32 screw in each upper hole. Finger-tighten the screws.

Do not tighten the screws completely until all the screws are in place and the tray assembly is level.



2. Attach the rear brackets to the rear rails of the cabinet using four 10-32 screws.

Align the lower hole of each rear bracket with the rail hole you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 20.](#)

Secure the brackets using one 10-32 screw in each lower hole. Finger-tighten the screws.

Align the upper hole of each rear bracket with the coinciding hole in the cabinet rail. Secure the brackets to the rails using one 10-32 screw in each upper hole. Finger-tighten the screws.

Do not tighten the screws completely until all the screws are in place and the tray assembly is level.

3. Make sure the tray assembly is level.

Use a level to ensure the tray assembly is level front-to-back and left-to-right.

Adjust as necessary.

4. Once the tray assembly is level, completely tighten all of the bracket screws.

Tighten the eight 10-32 screws that secure the front and rear brackets to the vertical cabinet rails.

5. Slide the tray assembly in and out of the cabinet to be sure the slides operate smoothly.

Installing the Server Into the Tray Assembly

1. Be sure the cabinet is stabilized so that the cabinet cannot move or tip forward when the tray is extended and the server is placed on the tray.

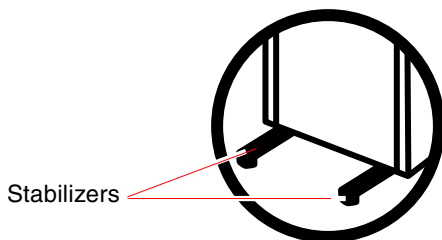
If there are feet beneath the cabinet to prevent it from rolling, be sure the feet are fully extended downward to the floor.

Stabilize the cabinet using the stabilizing mechanisms provided with the cabinet.

See the instructions provided with the cabinet.



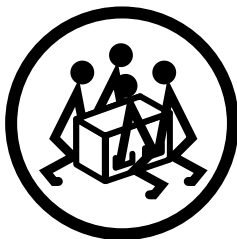
Caution – Before you slide the tray out, be sure the cabinet is stabilized so that it cannot move or tip forward. See the cabinet documentation for information about stabilizing the cabinet.



Some cabinets may be equipped with stabilizers or bolt-down mechanisms. See the cabinet documentation for stabilizing instructions.



Caution – Do not attempt to lift the server until a qualified service technician removes all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server. See [“Preparing the Server” on page 8](#) for information about removing these components.



2. Extend the tray all the way forward.

Standing in front of the cabinet, grasp the tray handle and pull the tray toward you until it stops.

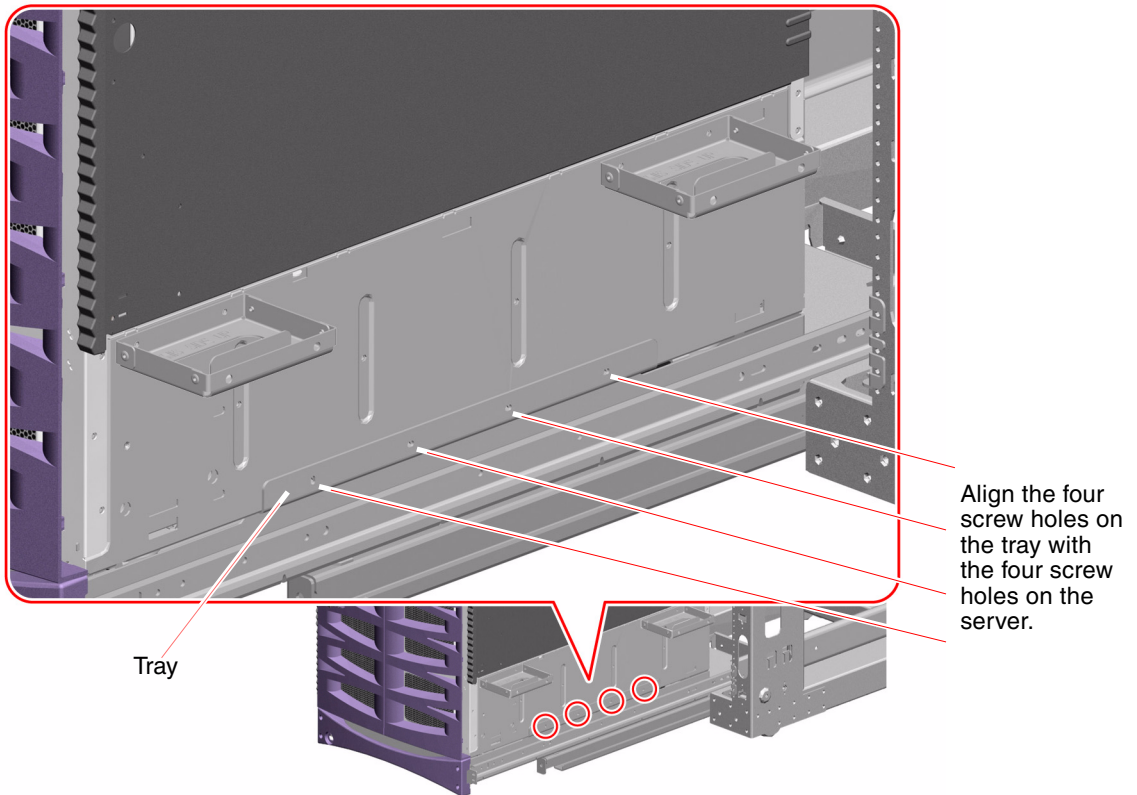


Caution – Do not place your fingers on the tray or under the server while you are lifting the server and positioning it on the tray.

3. Place the server on the tray.

- a. Lift the server (two persons on each side of the server) using the lifting handles that you installed in [“Preparing the Server” on page 8](#).
- b. Position the server on the tray so that the front of the server is at the front of the tray and the back of the server is at the back of the tray.

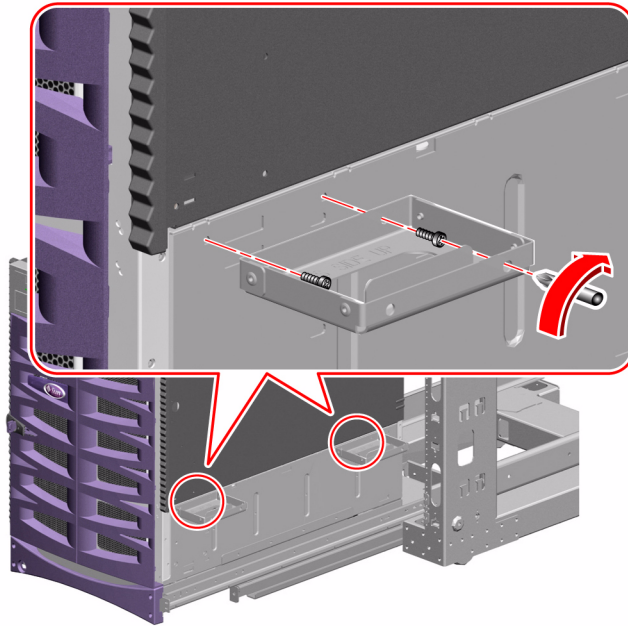
4. Adjust the server on the tray until the four holes on each side of the server align with the four holes in the tray assembly.



5. Remove the four lifting handles from the sides of the server.
 - a. Insert the screwdriver through one of the access holes on the outside of the handle.

Using the access hole makes it easier to reach the opposite screw hole on the inside of the handle to remove the screw. See the following figure.
 - b. Remove the two M4 screws that attach each handle to the server.
 - c. Save the eight M4 screws you remove.

You will need to use the screws in Step 7.



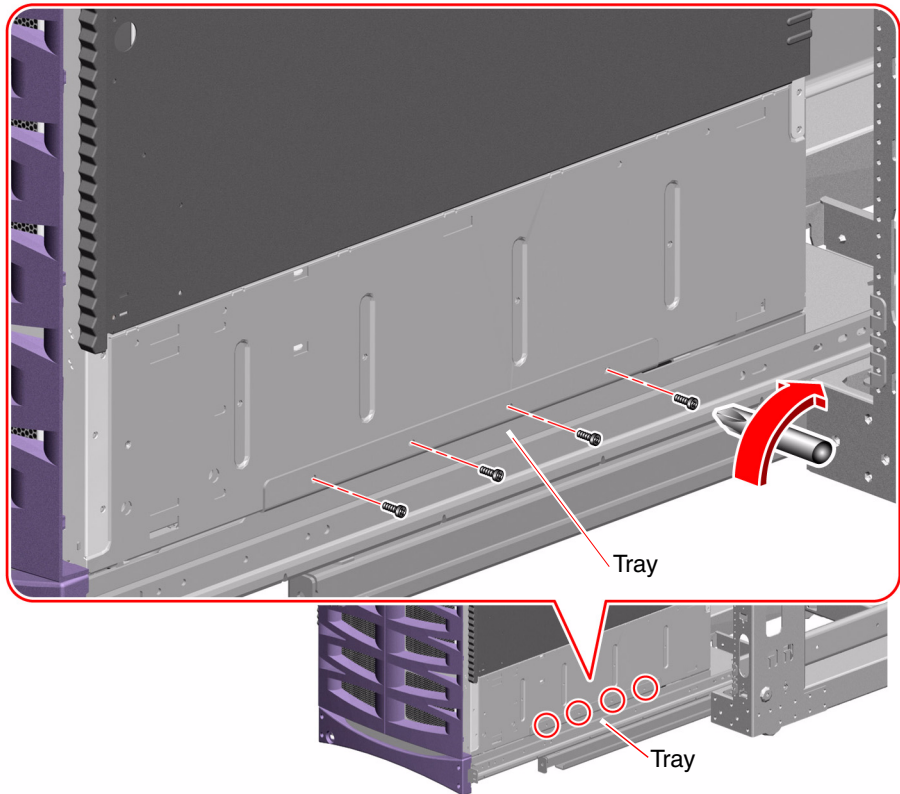
6. Secure the handles to the rack for safekeeping.

You must reattach the handles if you need to remove the server from the cabinet.

7. Secure the server to the tray assembly using the eight M4 screws you removed in Step 5.

Use four M4 screws on each side of the server as shown in the following figure.

Do not tighten the screws until all screws are in place and you check the placement of the server.



8. Check that the server is level and centered on the tray.

Use a level and adjust the server position if necessary.

9. Tighten the eight M4 screws that secure the server to the tray assembly.

Restoring the Server

1. **A qualified service technician must install the CPU/Memory boards and fan trays that were removed before you installed the server into the cabinet.**

See the *Sun Fire V890 Server Service Manual* for instructions to install components.



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.

2. **If you removed the server's side doors, replace them.**



Caution – Avoid keeping the server's doors open for extended periods while the system is operating. Server doors must be closed to prevent automatic thermal shutdown.

3. **Close both of the server's side doors securely.**
4. **Slide the tray assembly into the cabinet.**
5. **Install the power supplies that you removed before you installed the server into the cabinet.**

See the *Sun Fire V890 Server Service Manual* for installation instructions.

Securing the Server in the Cabinet

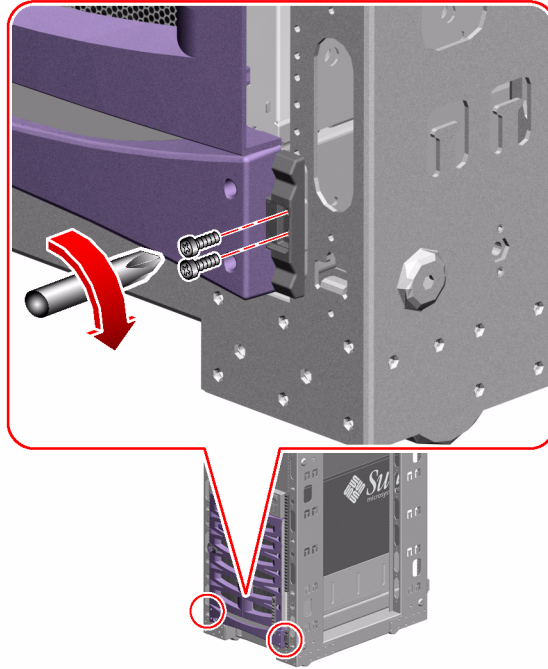
To secure the tray assembly and server in the cabinet, attach the tray handle to the front rails of the cabinet.

1. **Attach the tray handle to the front rails of the cabinet.**

Use one or two 10-32 screws to attach the tray handle to the front rails.

If each of the two screw holes on each side of the handle aligns with a rail hole, use two 10-32 screws to attach each side of the tray handle to each front rail as shown in the following figure.

If only one screw hole on each side of the handle aligns with a rail hole, use one 10-32 screw to attach each side of the tray handle to each front rail.



2. Locate the Sun Fire V890 server key.

3. Lock the system in the cabinet.

Insert the Sun Fire V890 server key into the keylock on the tray handle and turn the key 90 degrees counterclockwise.

Locking the tray handle extends the security plates so that they cover the screw heads on each side of the tray handle. The security plates prevent removal of the screws that secure the tray and the server to the cabinet.

4. Remove and safeguard the key.

Installing Trim Strips

The lower decorative panels (trim strips) were removed when you removed the lower side panels. To restore the trim strips:

1. **Locate the two trim strips provided in the rackmounting kit.**
2. **Attach one trim strip to the right front cabinet rail and one trim strip to the left front cabinet rail.**

Using the two captive screws, attach each trim strip.

If only one screw on each trim strip aligns with a rail hole, use one screw to attach each trim strip to each front rail.

Restoring the Cabinet

1. **Replace the front and back doors of the cabinet, if applicable.**
See the instructions provided with the cabinet.
2. **If you removed the side panels from the cabinet, do not replace them until you connect and route the server cables.**



Caution – To prevent the cabinet from tipping forward, do not attempt to roll or move the cabinet after installing the server in the cabinet.

Managing Cables

You will need to develop a cable management scheme that is customized for your installation. The Sun Fire V890 server rackmounting kit provides several tools that may aid you in managing the server power cords and cables:

- Server cable management bracket (with integrated releasable tie wraps) that attaches to the rear of the server. See [“Attach the Cable Management Bracket to the Server” on page 16](#).
- Cabinet cable management bracket (with separate releasable tie wraps) that attaches to the rear of the cabinet. See [“Attach the Cable Management Bracket to the Cabinet” on page 32](#).
- Three universal power jumper cords that enable you to provide additional slack in the server power cords. See the following general guidelines for more information.

In addition, some cabinets have cable management features or optional cable management accessories.

The following general guidelines describe techniques for routing and managing the server cables:

- Allow enough slack in the server power cords and cables so that the tray assembly can be fully extended from the front of the cabinet for service access. If the server power cords are too short for your particular installation, three universal jumper cords, provided with the rackmounting kit, allow you to gain the additional slack needed. One end of a jumper cord plugs in to a Sun Fire V890 server power supply; the other end of the jumper cord plugs in to a Sun Fire V890 server power cord. The server power cord then plugs in to an AC power source.
- To prevent bending or pinching of the cables when the tray assembly is fully extended, be sure all cables are kept clear of the slides and other obstructions.

- When connecting the power jumper cords to the server's power cords, use tie wraps to secure each connection, as shown in the following figure.



Attach the Cable Management Bracket to the Cabinet

The cable management bracket that attaches to the rear of the cabinet provides strain relief for the power cord and other server cables. Releasable tie wraps provided with the rackmounting kit can be used to secure the cables. See [“Managing Cables” on page 31](#) for general cable management guidelines.

To attach the cable management bracket to the rear of the cabinet, complete the following steps:

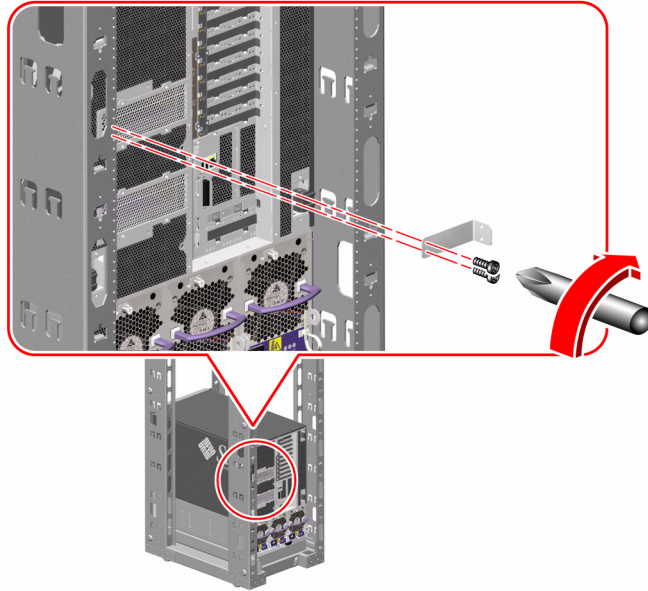
- 1. Locate the cable management bracket for the cabinet.**

This bracket is provided with the rackmounting kit.

2. Attach the bracket to one of the rear rails of the cabinet, as shown in the following figure.

Use two 10-32 screws to attach the bracket to the cabinet rail.

You can attach the bracket to either the right or left rear rail of the cabinet and at any location on the rail that suits your cable management scheme.



What Next

Connect the server power cords, network cables, and I/O interface cables to the server and route the cables, allowing enough slack for service access. See “How to Install the Sun Fire V890 Server” in the *Sun Fire V890 Server Owner’s Guide*.

Note – A grounding screw is located just above the server’s center power supply. Be sure to ground the server to the cabinet using an appropriate grounding strap. Proper grounding prevents ground loops between systems and peripherals and helps guard against possible data loss.

Installing the Server Into the Sun Rack 900 Cabinet

This chapter provides step-by-step instructions for installing the Sun Fire V890 server into the Sun Rack 900 cabinet.

To install a Sun Fire V890 server into the cabinet, complete the following tasks in the order listed:

- Make sure you have completed the prerequisite tasks. See [“Before You Begin” on page 36](#).
- Prepare the server. See [“Preparing the Server” on page 38](#).
- Prepare the cabinet. See [“Preparing the Cabinet” on page 46](#).
- Install the tray assembly into the cabinet. See [“Installing the Tray Assembly Into the Cabinet” on page 46](#).
- Install the server into the tray assembly. See [“Installing the Server Into the Tray Assembly” on page 52](#).
- Make the server ready for operation. See [“Restoring the Server” on page 57](#).
- Secure the tray handle to the cabinet rails. See [“Securing the Server in the Cabinet” on page 58](#).
- Replace the front and back doors of the cabinet. See [“Restoring the Cabinet” on page 59](#).

Before You Begin

Before you begin the installation procedures, complete the following tasks:

- Verify that the operating location complies with the Sun Fire V890 server requirements and the requirements of the cabinet. See [Appendix B](#) in this guide and the cabinet documentation for information.
- Check [“Safety and System Performance Cautions” on page 36](#) and make sure your installation plan reflects the measures described.
- Check the documentation provided with the cabinet and make sure your installation plan reflects the cautionary measures described.
- Unpack the rackmounting kit and verify that you have all the components and hardware described in [“Inventory” on page 2](#).
- Gather the required tools. See [“Tools, Equipment, and Documentation Required” on page 37](#).

Safety and System Performance Cautions

Adhere to the following cautions when installing a Sun Fire V890 server into the cabinet. For a complete description of the safety cautions to follow when installing a server, see the *Sun Fire V890 Server Owner’s Guide*.



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.



Caution – Do not attempt to lift the server until a qualified service technician removes all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server. See [“Preparing the Server” on page 38](#) for information about removing these components.



Caution – Be sure the cabinet is stabilized so that it cannot move or tip forward when one or more systems or devices are fully extended from the front of the cabinet. The Sun Rack 900 cabinet provides several stabilizing features such as brackets for permanent floor mounting, leveling feet, and an anti-tilt bar. See the instructions provided with the cabinet to implement the stabilizing features that are appropriate for your site.



Caution – Install the server as low as possible in the cabinet. For best stability, do not install the server above equipment that weighs less than the server. If you will be installing two servers in a cabinet, install the lower server first.



Caution – To prevent the cabinet from tipping forward, do not attempt to roll or move the cabinet after installing the server in the cabinet.



Caution – For proper ventilation and cooling of the server, be sure the operating location complies with the requirements given in [Appendix B](#).

Tools, Equipment, and Documentation Required

The following tools, equipment, and documentation are required when rackmounting the server:

- Phillips No. 3 screwdriver
- Phillips No. 2 screwdriver
- Phillips No. 1 screwdriver
- Level

- Flat blade screwdriver
 - Adjustable wrench
 - Masking tape or felt tip pen
 - Antistatic wrist strap
 - Antistatic mat
 - *Sun Fire V890 Server Owner's Guide*
 - *Sun Fire V890 Server Service Manual*
-

Preparing the Server

To prepare the server for rackmounting, complete the following tasks:

- Power off the system and disconnect the server's power cords, network cables, and I/O cables. See the *Sun Fire V890 Server Service Manual* for instructions.
- Remove all power supplies, CPU/Memory boards, I/O fan trays, and CPU fan trays. See ["Remove Components" on page 38](#).
- Remove the side door handles. See ["Remove the Handle From Each Side Door" on page 40](#).
- Remove the fenders and lower side panels. See ["Remove the Fenders and Lower Side Panels" on page 42](#).
- Install the lifting handles. See ["Install the Lifting Handles" on page 45](#).

Remove Components

In order for four persons to lift the server safely, you must reduce the weight of the server before you attempt to install it into the cabinet. To reduce the weight of the server, a qualified service technician should remove the following components:

- All power supplies
- All CPU/Memory boards
- All CPU fan trays
- All I/O fan trays

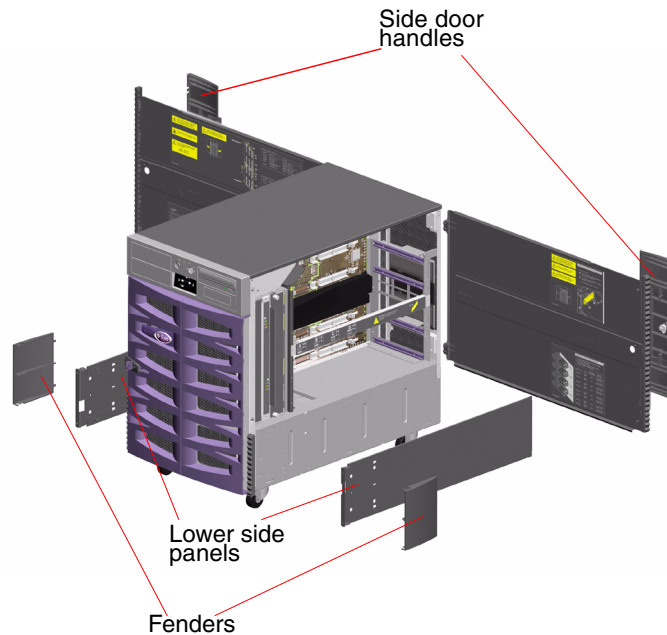
See the *Sun Fire V890 Server Service Manual* for component removal procedures.



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.

Overview of Parts to Be Removed From the Chassis

The following figure identifies the parts that you must remove from the chassis before you can install the server into the cabinet.



The following sections provide detailed information about removing each part.

Remove the Handle From Each Side Door

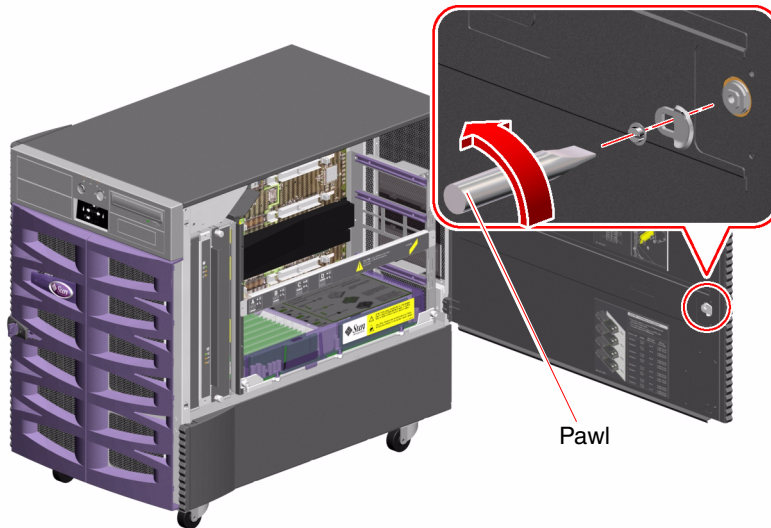
1. **Open one of the server's side doors.**

Use the key provided with the server to unlock the door.

2. **Remove the pawl from the side door.**

On the inside of the door, remove the slot head screw from the center of the pawl.

Pull the pawl straight out to remove it.

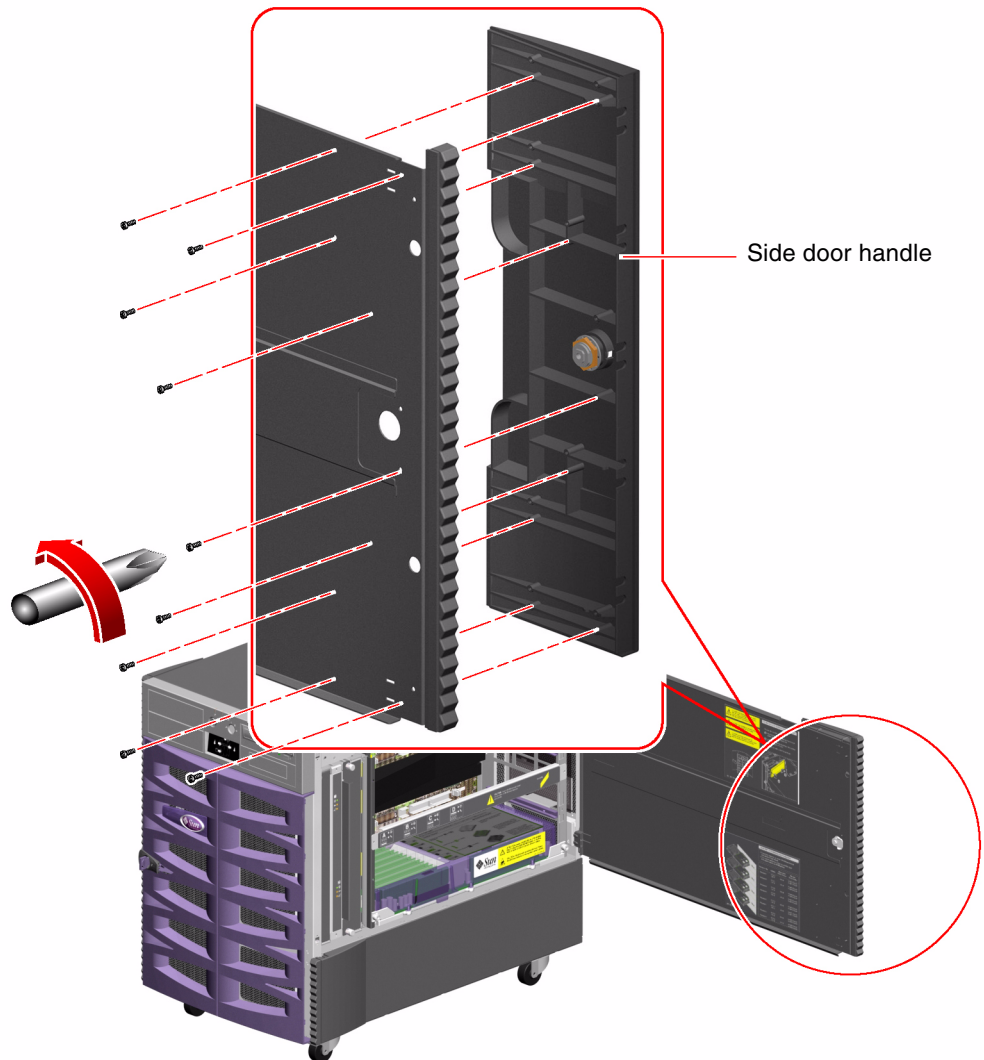


3. Remove the side door handle.

Remove the nine screws from the inside of the door.

From the outside of the door, pull the handle straight out to remove it.

Note – The lock remains in the handle.

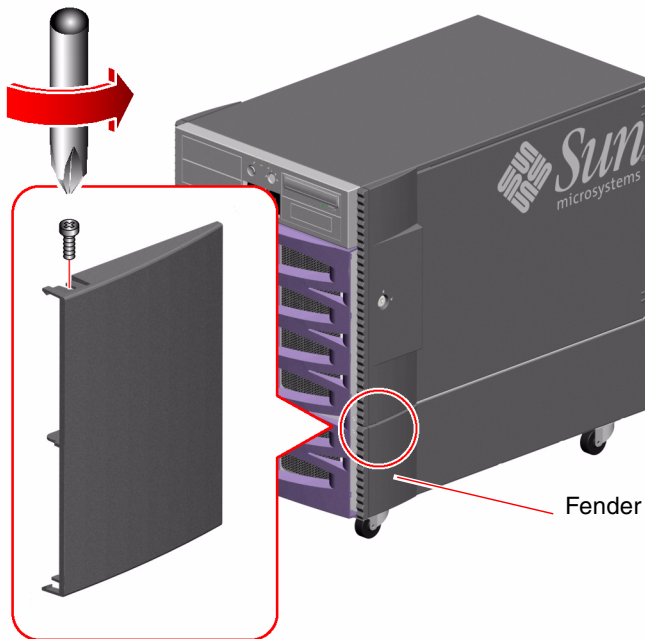


4. Repeat Steps 1 through 3 for the other side door.

5. Place the handles, pawls, and screws into the kit carton for safekeeping.
You will need to reinstall these parts if you reconfigure the server as a deskside unit.

Remove the Fenders and Lower Side Panels

1. Remove the fender from the front of each of the lower side panels.
 - a. Remove the screw from the top of the fender.

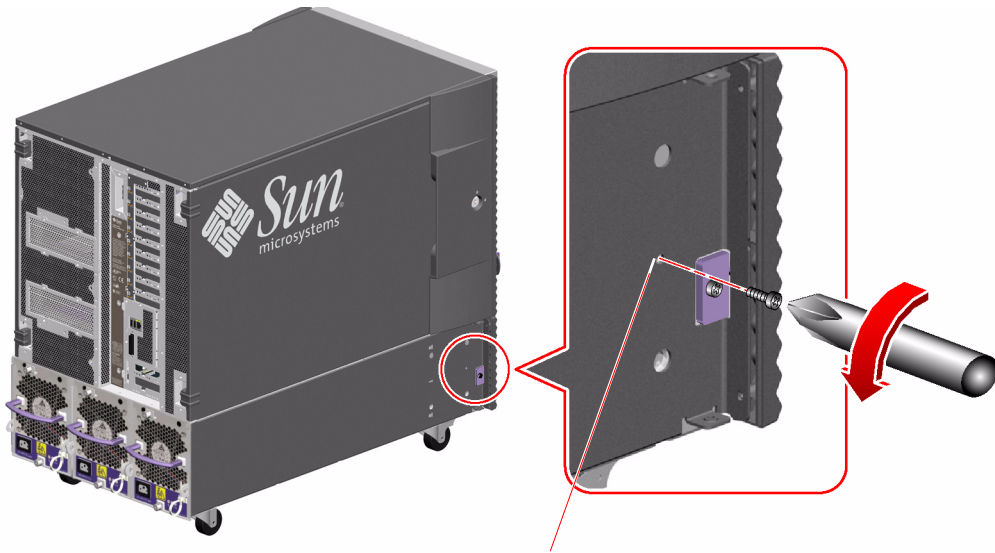


- b. Grasp the top and bottom edges of the fender and carefully flex the fender to remove it.
 - c. Repeat Steps a and b to remove the fender from the other lower side panel.

2. Remove the lower side panel from the left side of the server.

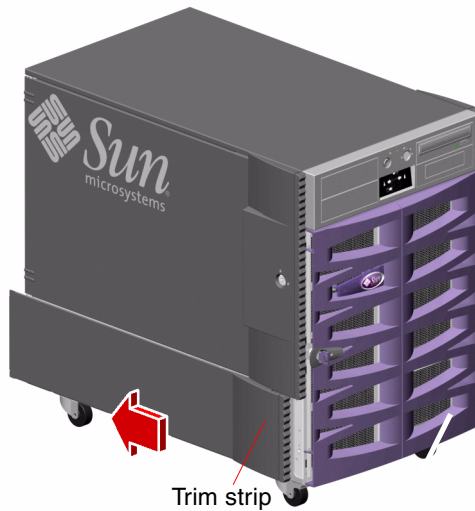
Remove the screw located approximately 3 inches (8 cm) from the front of the lower side panel.

Note – On the left side of the server, do not remove the screw that attaches the small bracket to the side of the server. Removing this screw prevents the front door from closing securely.



Do not remove this screw.

3. **Grasp the trim strip and slide the lower side panel toward the rear of the server.**
The lower side panel should disengage as you slide the panel so that you can easily remove it.

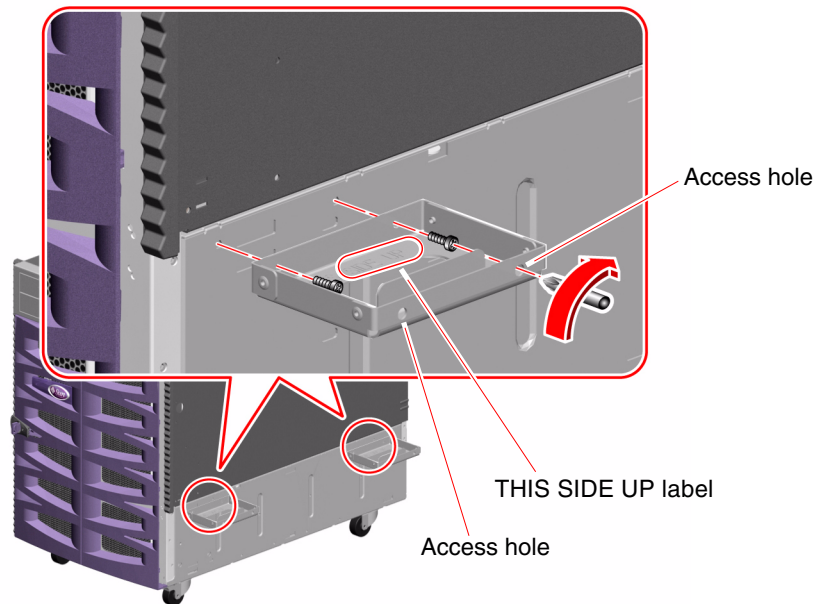


4. **Repeat Steps 2 and 3 for the right lower side panel.**
5. **Place the fenders, lower side panels, and screws into the kit carton for safekeeping.**
You will need to reinstall these parts if you reconfigure the server as a deskside unit.

Install the Lifting Handles

1. Locate the four lifting handles provided with the rackmounting kit.
2. Install two lifting handles on one side of the server using two M4 screws to attach each handle to the lower side of the server.
 - a. With the **THIS SIDE UP** label facing upward, insert the screwdriver through one of the access holes on the outside of the handle.

Using the access hole makes it easier to reach the screw hole on the inside of the handle.
 - b. Position the screw on the inside of the handle in the hole that is opposite the access hole.
 - c. Attach the handle to the server using the appropriate screw hole just below the server side door. See the following figure.
 - d. Finish installing the handle by repeating the procedure using the second access hole on the outside of the handle.
 - e. Repeat Steps a through d for the second handle.



3. Repeat Step 2 to install two handles on the other side of the server.

Preparing the Cabinet

Make sure the operating location complies with the Sun Fire V890 server requirements and cabinet requirements. See [Appendix B](#) of this guide and the cabinet documentation for information.

1. Be sure the cabinet is stabilized so that the cabinet cannot move or tip forward.

Stabilize the cabinet by implementing the stabilizing features of the Sun Rack 900 cabinet that are appropriate for your site. See the instructions provided with the Sun Rack 900 cabinet.

2. Open the front and rear doors.

See the instructions provided with the cabinet.

3. Remove (if applicable) the front and rear doors and the side panels of the cabinet.

See the instructions provided with the cabinet.

Installing the Tray Assembly Into the Cabinet

To install the tray assembly into the cabinet, complete these tasks:

- If necessary, adjust the rear brackets on the tray assembly slides for the depth of the cabinet. See [“Adjust the Rear Brackets” on page 46](#).
- Determine the vertical position of the server in the cabinet. See [“Determine the Vertical Position of the Server in the Cabinet” on page 48](#).
- Attach the tray assembly to the cabinet rails. See [“Attach the Tray Assembly to the Cabinet” on page 49](#).

Adjust the Rear Brackets

The depth of the Sun Rack 900 cabinet from the outside face of the front rail to the outside face of the rear rail is 27 inches (68.58 cm). The rear brackets will be preset so that the slides fit the depth of the Sun Rack 900 cabinet. However, the rear brackets might need to be adjusted slightly.

If necessary to adjust the rear brackets, perform the following steps:

1. Measure the length of each slide.

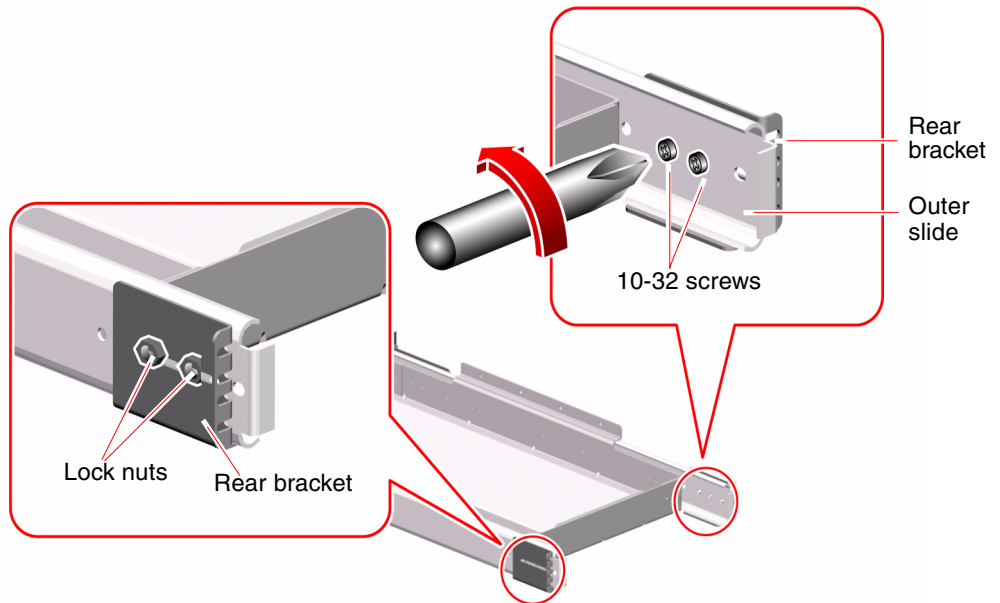
Measure the distance from the inside face of the front bracket to the inside face of the rear bracket. If this measurement is longer or shorter than 27 inches (68.58 cm), you must adjust the rear bracket on each slide to accommodate the depth of the cabinet.

2. If required, adjust the rear bracket on each slide.

a. Extend the tray assembly until you can see the two 10-32 screws located on the inside rear of each outer slide.

The screws on the inside of the outer slide (and the lock nuts on the outside of the bracket) secure the rear bracket to the outer slide.

b. Loosen the two 10-32 screws and the lock nuts.



c. Slide each rear bracket forward or backward as required to accommodate the depth of the cabinet.

Slide each rear bracket and measure the distance from the inside face of the front bracket to the inside face of the rear bracket.

Continue to slide the rear bracket and measure the distance from the inside face of the front bracket to the inside face of the rear bracket until the measurement equals 27 inches (68.58 cm).

Note – Four screw holes are provided in the outer slide. You might need to move one (or both) of the 10-32 screws to another of the four screw holes. Be sure to use both screws to secure each rear bracket to the outer slide.

- d. **Tighten the two 10-32 screws and lock nuts on each slide to resecure the rear brackets to the outer slides.**

Determine the Vertical Position of the Server in the Cabinet

Plan to install the tray assembly into the lowest available position in the cabinet. If you are installing two Sun Fire V890 servers into the cabinet, install the lower server first.

To determine the vertical position of the server, identify which cabinet rail holes to use for attaching the front and rear brackets by completing the following steps:

1. **Locate and mark the correct holes on the right and left front vertical cabinet rails.**

Make sure there is enough vertical space to install the server.

Note – Each Sun Fire V890 server requires 17 rack units (29.75 inches, 75.6 cm) or 51 holes on the vertical rails of the cabinet. The Sun Rack 900 cabinet can accommodate two Sun Fire V890 servers.

If your Sun Rack 900 cabinet is equipped with the Sun Power Distribution System (PDS) option and the Sun Fire V890 server will be installed immediately above the two power sequencers provided by the Sun PDS option, the Sun Fire V890 server can be installed using the first rail hole to attach the front and rear brackets.

If your Sun Rack 900 cabinet is equipped with a third-party PDS or power sequencers and the Sun Fire V890 server will be installed immediately above the third-party PDS or power sequencers, leave at least one free hole above the PDS or sequencers.

Using masking tape or a felt tip pen, mark the lowest available hole for installing the tray on the right front vertical rail of the cabinet.

- If you are installing the Sun Fire V890 server immediately above the two power sequencers provided by the Sun PDS option, the first rail hole is the lowest available hole.

- If you are installing the Sun Fire V890 server immediately above a third-party PDS or power sequencers, the second free hole is the lowest available hole.

Mark the matching hole on the left front rail of the cabinet. Count the holes to be sure you are using matching holes on the right and left rails of the cabinet.

2. Locate and mark the corresponding holes on the right and left rear vertical cabinet rails.

Using masking tape or a pen, mark the matching holes on the right and left rear vertical rails.

Count the holes to be sure you are using the holes that match the ones you marked in Step 1.

Attach the Tray Assembly to the Cabinet

Using the rail holes you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 48](#), attach the tray assembly to the cabinet by completing the following steps:

1. Attach the front brackets on the slides of the tray assembly to the front rails of the cabinet.

a. With the help of an assistant, position the tray assembly on the inside of the cabinet with the front brackets at the front of the cabinet.

To fit the tray assembly between the rails, you will need to tilt it by lowering one side of the assembly.



b. Attach the front brackets to the front rails of the cabinet using four M6 screws.

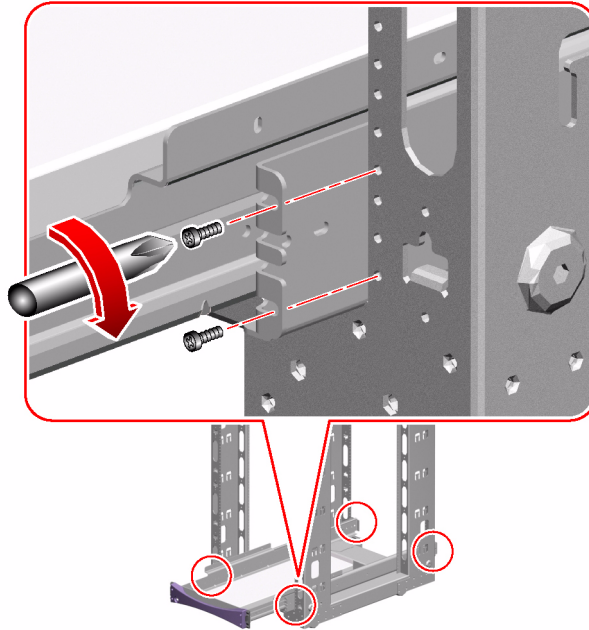
Align the lower hole of each front bracket with the front rail holes you marked in [“Determine the Vertical Position of the Server in the Cabinet”](#) on page 48.

Secure the front brackets using one M6 screw in the lower hole of each bracket. Finger-tighten the screws.

Align the upper hole of each front bracket with the corresponding hole in the cabinet rail. Secure the brackets to the rails using one M6 screw in each upper hole. Finger-tighten the screws.

Do not tighten the screws completely until all the screws are in place and the tray assembly is level.

Note – If your Sun Rack 900 cabinet is equipped with the Sun PDS option and the Sun Fire V890 server will be installed immediately above the two power sequencers provided by the Sun PDS option, align the lower hole of each front bracket with the first rail hole as shown in the following figure.



2. Attach the rear brackets to the rear rails of the cabinet using four M6 screws.

Align the lower hole of each rear bracket with the rail hole you marked in [“Determine the Vertical Position of the Server in the Cabinet”](#) on page 48.

Secure the brackets using one M6 screw in each lower hole. Finger-tighten the screws.

Align the upper hole of each rear bracket with the coinciding hole in the cabinet rail. Secure the brackets to the rails using one M6 screw in each upper hole. Finger-tighten the screws.

Do not tighten the screws completely until all the screws are in place and the tray assembly is level.

3. Make sure the tray assembly is level.

Use a level to ensure the tray assembly is level front-to-back and left-to-right.
Adjust as necessary.

4. Once the tray assembly is level, completely tighten all of the bracket screws.

Tighten the eight M6 screws that secure the front and rear brackets to the vertical cabinet rails.

5. Slide the tray assembly in and out of the cabinet to be sure the slides operate smoothly.

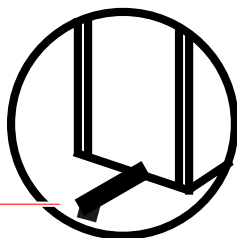
Installing the Server Into the Tray Assembly

1. Be sure the cabinet is stabilized so that the cabinet cannot move or tip forward when the tray is extended and the server is placed on the tray.

Stabilize the cabinet by implementing the stabilizing features of the Sun Rack 900 cabinet that are appropriate for your site. See the instructions provided with the Sun Rack 900 cabinet to implement the stabilizing features.



Caution – Before you slide the tray out, be sure the cabinet is stabilized so that it cannot move or tip forward. See the cabinet documentation for information about stabilizing the cabinet.

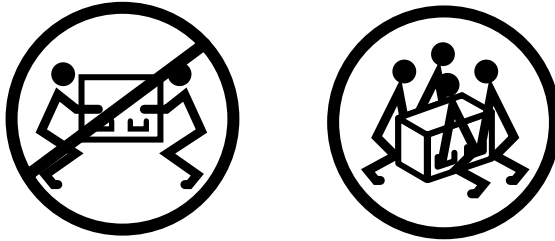


Anti-tilt bar

The Sun Rack 900 cabinet is equipped with an anti-tilt bar at the front center of the cabinet. See the cabinet documentation for stabilizing instructions.



Caution – Do not attempt to lift the server until a qualified service technician removes all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server. See [“Preparing the Server” on page 38](#) for information about removing these components.



2. Extend the tray all the way forward.

Standing in front of the cabinet, grasp the tray handle and pull the tray toward you until it stops.

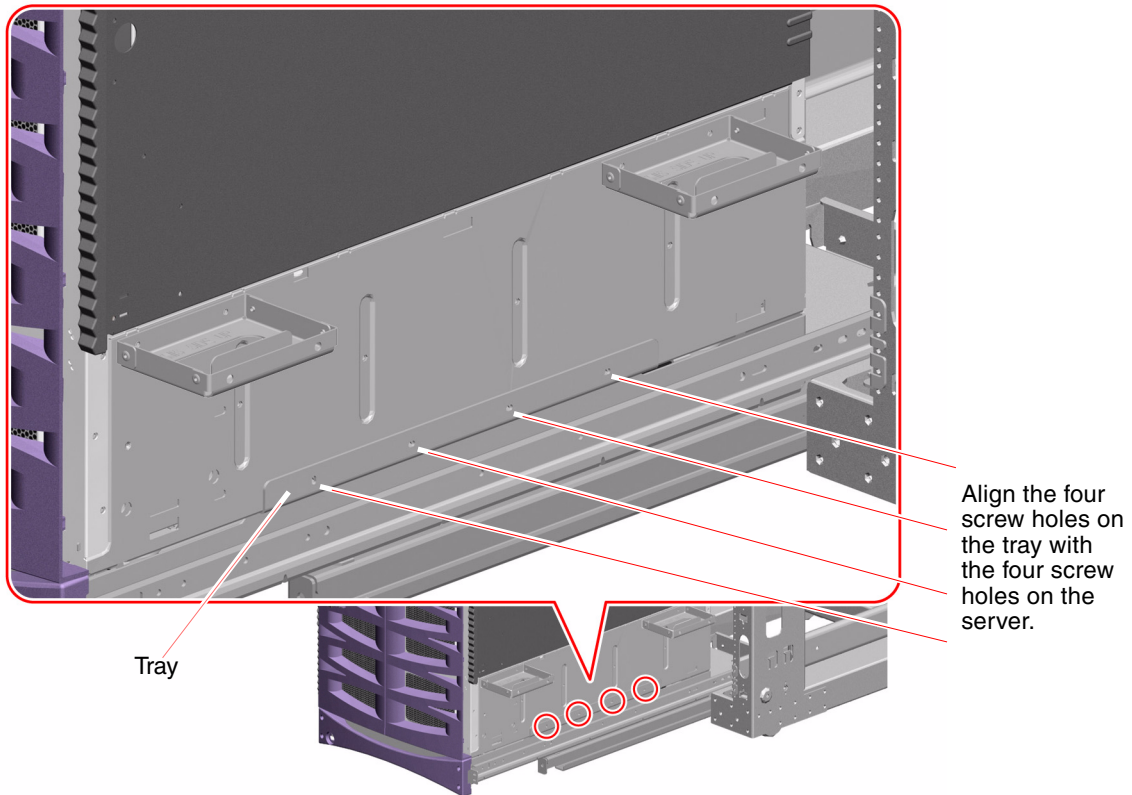


Caution – Do not place your fingers on the tray or under the server while you are lifting the server and positioning it on the tray.

3. Place the server on the tray.

- a. Lift the server (two persons on each side of the server) using the lifting handles that you installed in [“Install the Lifting Handles” on page 45](#).
- b. Position the server on the tray so that the front of the server is at the front of the tray and the back of the server is at the back of the tray.

4. Adjust the server on the tray until the four holes on each side of the server align with the four holes in the tray assembly.



5. Remove the four lifting handles from the sides of the server.

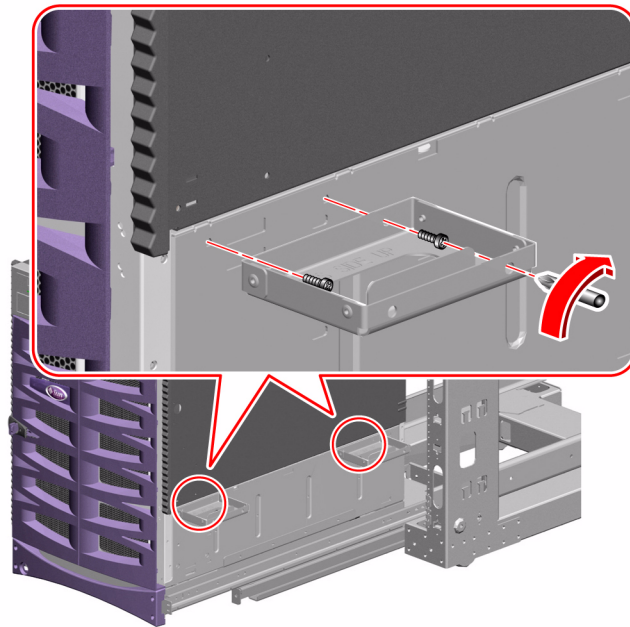
- a. Insert the screwdriver through one of the access holes on the outside of the handle.**

Using the access hole makes it easier to reach the opposite screw hole on the inside of the handle to remove the screw. See the following figure.

- b. Remove the two M4 screws that attach each handle to the server.**

- c. Save the eight M4 screws you remove.**

You will need to use the screws in Step 7.



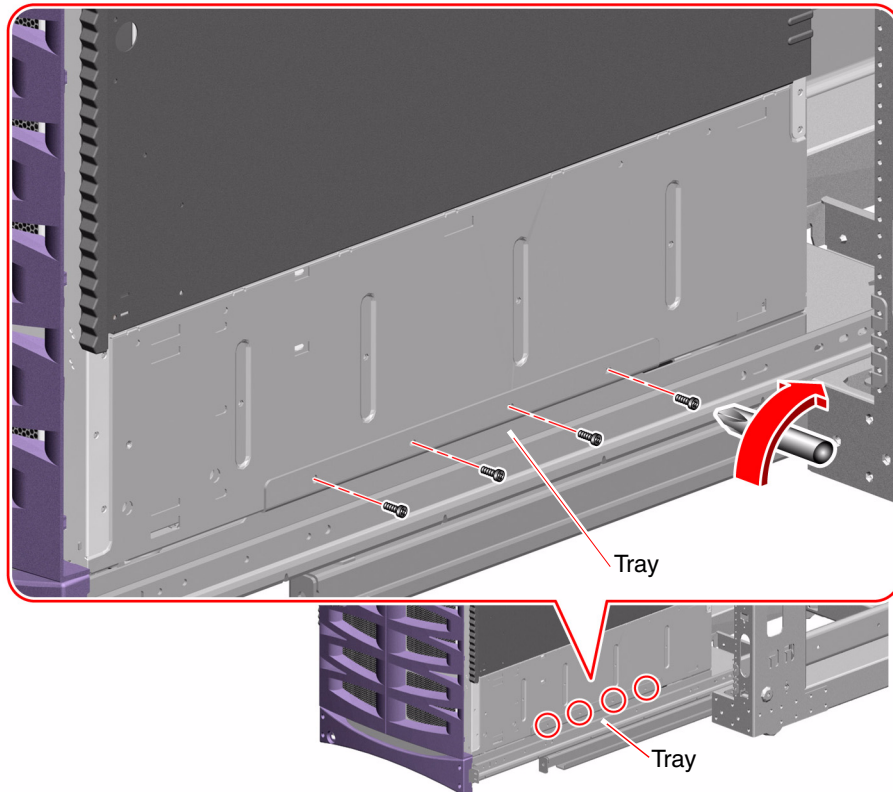
6. Secure the handles to the rack for safekeeping.

You must reattach the handles if you need to remove the server from the cabinet.

7. Secure the server to the tray assembly using the eight M4 screws you removed in Step 5.

Use four M4 screws on each side of the server as shown in the following figure.

Do not tighten the screws until all screws are in place and you check the placement of the server.



8. **Check that the server is level and centered on the tray.**
Use a level and adjust the server position if necessary.
9. **Tighten the eight M4 screws that secure the server to the tray assembly.**

Restoring the Server

1. **A qualified service technician must install the CPU/Memory boards and fan trays that were removed before you installed the server into the cabinet.**

See the *Sun Fire V890 Server Service Manual* for installation instructions.

2. **If you removed the server's side doors, replace them.**



Caution – Avoid keeping the server's doors open for extended periods while the system is operating. Server doors must be closed to prevent automatic thermal shutdown.

3. **Close both of the server's side doors securely.**
4. **Slide the tray assembly into the cabinet.**
5. **Install the power supplies that you removed before you installed the server into the cabinet.**

See the *Sun Fire V890 Server Service Manual* for installation instructions.

Securing the Server in the Cabinet

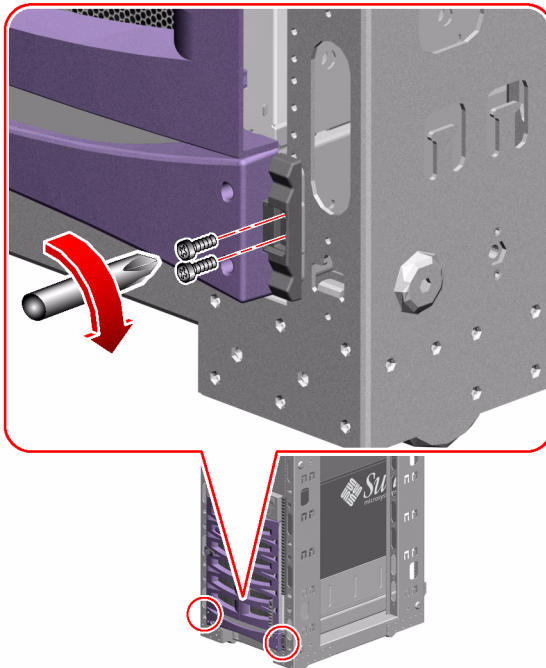
To secure the tray assembly and server in the cabinet, attach the tray handle to the front rails of the cabinet.

1. Attach the tray handle to the front rails of the cabinet.

Use one or two M6 screws to attach the tray handle to each front rail.

If each of the two screw holes on each side of the handle aligns with a rail hole, use two M6 screws to attach each side of the tray handle to each front rail as shown in the following figure.

If only one screw hole on each side of the handle aligns with a rail hole, use one M6 screw to attach each side of the tray handle to each front rail.



2. **Locate the Sun Fire V890 server key.**

3. **Lock the system in the cabinet.**

Insert the Sun Fire V890 server key into the keylock on the tray handle and turn the key 90 degrees counterclockwise.

Locking the tray handle extends the security plates so that they cover the screw heads on each side of the tray handle. The security plates prevent removal of the screws that secure the tray and the server to the cabinet.

4. **Remove and safeguard the key.**

Restoring the Cabinet

1. **Replace the front and back doors of the cabinet, if applicable.**

See the instructions provided with the cabinet.

2. **If you removed the side panels from the cabinet, do not replace them until you connect and route the server cables.**



Caution – To prevent the cabinet from tipping forward, do not attempt to roll or move the cabinet after installing the server in the cabinet.

What Next

Connect the server power cords, network cables, and I/O interface cables to the server and route the cables, allowing enough slack for service access. See “How to Install the Sun Fire V890 Server” in the *Sun Fire V890 Server Owner’s Guide*.

Note – A grounding screw is located just above the server’s center power supply. Be sure to ground the server to the cabinet using an appropriate grounding strap. Proper grounding prevents ground loops between systems and peripherals and helps guard against possible data loss.

Installing the Server Into a 31.5-Inch Cabinet

These instructions describe how to install a Sun Fire V890 server into a 31.5-inch (80-cm) depth (rail-to-rail) rack using the short rear brackets supplied with the Sun Fire V890 server rackmounting kit.

Note – You can install only one Sun Fire V890 server into a Sun Fire Expansion Cabinet, Sun part SF-XCAB.

To install a Sun Fire V890 server into the cabinet, complete the following tasks in the order listed:

- Make sure you have completed the prerequisite tasks. See [“Before You Begin” on page 62](#).
- Prepare the server. See [“Preparing the Server” on page 64](#).
- Prepare the cabinet. See [“Preparing the Cabinet” on page 74](#).
- Install the tray assembly into the cabinet. See [“Installing the Tray Assembly Into the Cabinet” on page 74](#).
- Install the server into the tray assembly. See [“Installing the Server Into the Tray Assembly” on page 81](#).
- Make the server ready for operation. See [“Restoring the Server” on page 86](#).
- Secure the tray handle to the cabinet rails. See [“Securing the Server in the Cabinet” on page 87](#).
- Install the trim strips. See [“Installing Trim Strips” on page 88](#).
- Replace the front and back doors of the cabinet. See [“Restoring the Cabinet” on page 88](#).
- Develop the cable management scheme. See [“Managing Cables” on page 89](#).

Before You Begin

Before you begin the installation procedures, complete the following tasks:

- Verify that your cabinet meets the requirements described in [Appendix A](#).
- Check “[Safety and System Performance Cautions](#)” on page 62 and make sure your installation plan reflects the measures described.
- Check the documentation provided with your cabinet and make sure your installation plan reflects the cautionary measures described.
- Unpack the rackmounting kit and verify that you have all the components and hardware shown in Chapter 1.
- Gather the required tools. See “[Tools, Equipment, and Documentation Required](#)” on page 63.

Safety and System Performance Cautions

Adhere to the following cautions when installing a Sun Fire V890 server into a cabinet. For a complete description of the safety cautions to follow when installing a server, see the *Sun Fire V890 Server Owner’s Guide*.



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.



Caution – Do not attempt to lift the server until a qualified service technician removes all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server. See “[Preparing the Server](#)” on page 64 for information about removing these components.



Caution – Be sure the cabinet is stabilized so that it cannot move or tip forward when one or more systems or devices are fully extended from the front of the cabinet. The cabinet must be bolted securely to the floor or equipped with a sturdy and extendable anti-tip leg. If there are feet beneath the cabinet to prevent it from rolling, be sure the feet are fully extended downward to the floor. See the instructions provided with the cabinet.



Caution – Install the server as low as possible in the cabinet. For best stability, do not install the server above equipment that weighs less than the server. If you will be installing two servers in a cabinet, install the lower server first.



Caution – To prevent the cabinet from tipping forward, do not attempt to roll or move the cabinet after installing the server in the cabinet.



Caution – For proper ventilation and cooling of the server, be sure the cabinet and the operating location comply with the requirements given in [Appendix A](#).

Tools, Equipment, and Documentation Required

The following tools, equipment, and documentation are required when rackmounting the server:

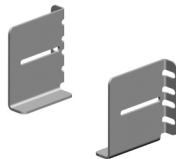
- Phillips No. 2 screwdriver
- Phillips No. 1 screwdriver
- Level
- Flat blade screwdriver

- Adjustable wrench
 - Masking tape or felt tip pen
 - Antistatic wrist strap
 - Antistatic mat
 - *Sun Fire V890 Server Owner's Guide*
 - *Sun Fire V890 Server Service Manual*
-

Using the Short Rear Brackets

The Sun Fire V890 server rackmounting kit for EIA-compliant racks contains two short rear brackets. These rear brackets are used to install the Sun Fire V890 server into a 31.5-inch (80-cm) depth (rail-to-rail) rack. The short rear brackets are in a bag labeled 560-2682-01 in the rackmounting kit.

The following illustration shows the additional short rear brackets.



Preparing the Server

To prepare the server for rackmounting, complete the following tasks:

- Power off the system and disconnect the server's power cords, network cables, and I/O cables. See the *Sun Fire V890 Server Service Manual* for instructions.
- Remove all power supplies, CPU/Memory boards, I/O fan trays, and CPU fan trays. See ["Remove Components" on page 65](#).
- Remove the side door handles. See ["Remove the Handle From Each Side Door" on page 67](#).
- Remove the fenders and lower side panels. See ["Remove the Fenders and Lower Side Panels" on page 69](#).
- Install the lifting handles. See ["Install the Lifting Handles" on page 72](#).

- Attach the cable management bracket to the back of the server. See [“Attach the Cable Management Bracket to the Server”](#) on page 73.

Remove Components



Caution – Do not open. Qualified Service Personnel Only. Failure to take this precaution may result in personal injury and system damage.

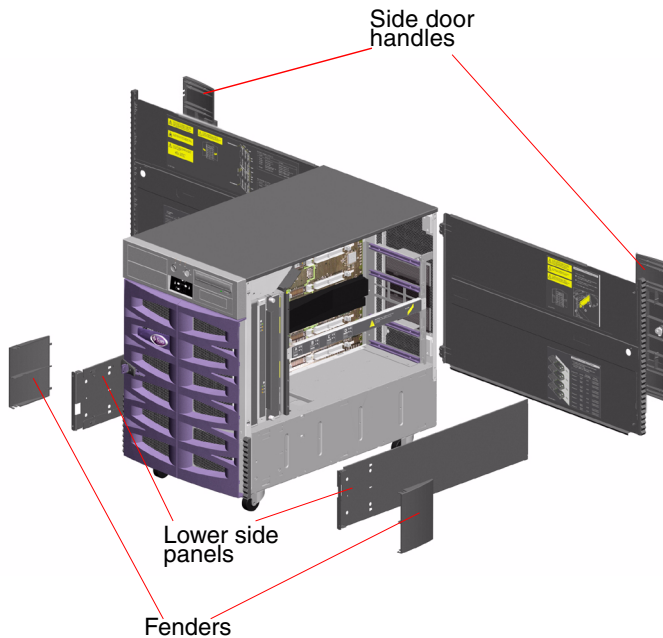
In order for four persons to lift the server safely, you must reduce the weight of the server before you attempt to install it into the cabinet. To reduce the weight of the server, a qualified service technician must remove the following components:

- All power supplies
- All CPU/Memory boards
- All CPU fan trays
- All I/O fan trays

See the *Sun Fire V890 Server Service Manual* for component removal procedures.

Overview of Parts to Be Removed From the Chassis

The following figure identifies the parts that you must remove from the chassis before you can install the server into the cabinet.



The following sections provide detailed information about removing each part.

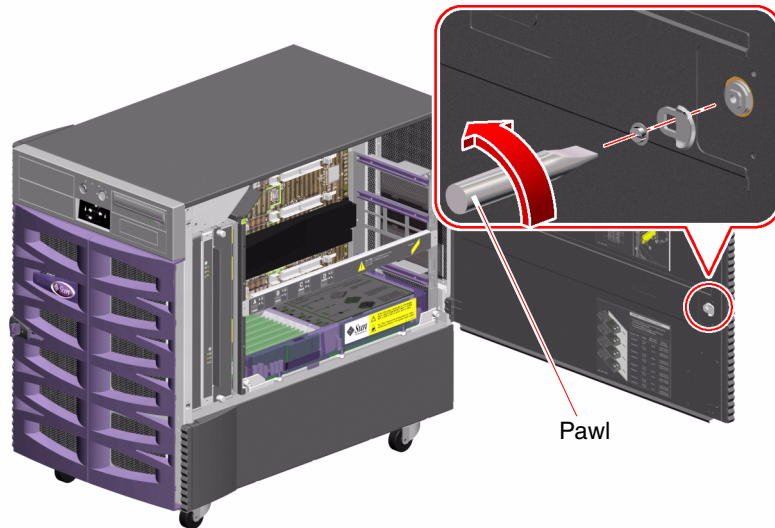
Remove the Handle From Each Side Door

1. **Open one of the server's side doors.**

Use the key provided with the server to unlock the door.

2. **Remove the pawl from the side door.**

On the inside of the door, remove the slot head screw from the center of the pawl.
Pull the pawl straight out to remove it.

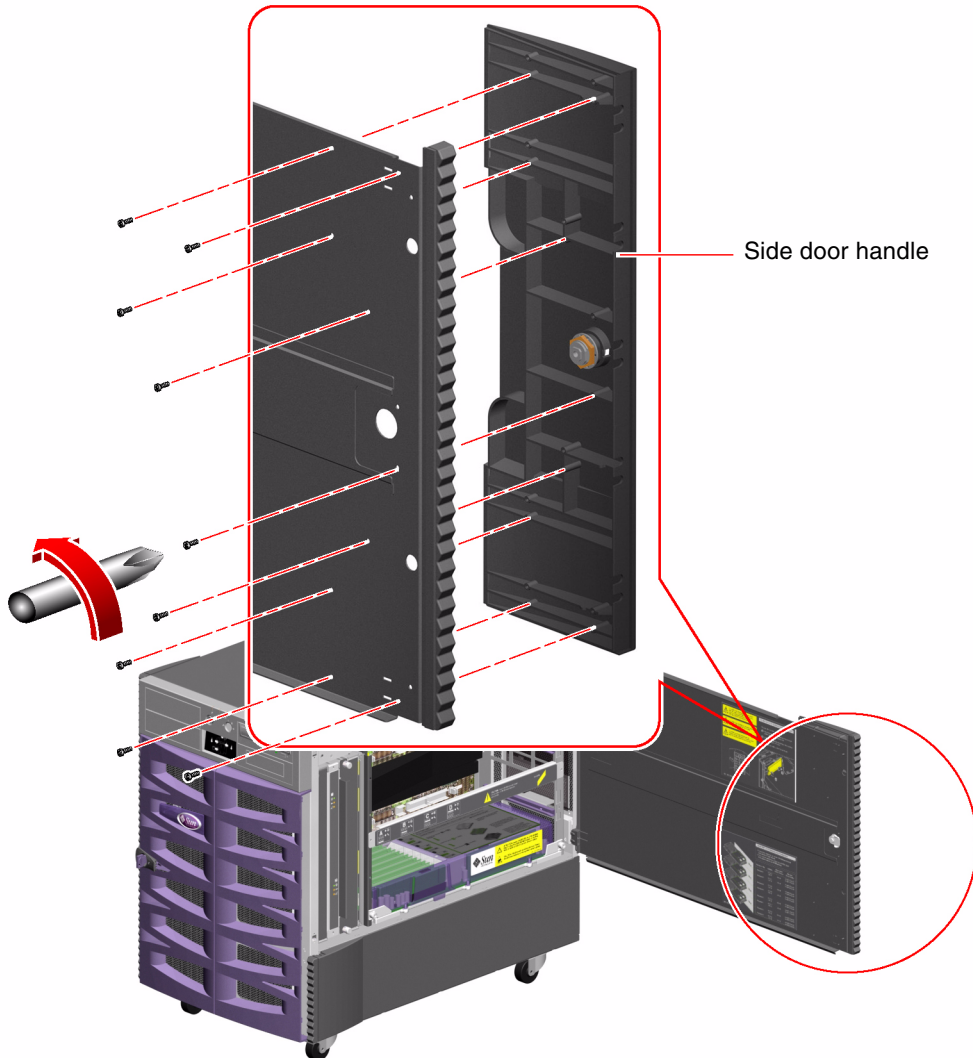


3. Remove the side door handle.

Remove the nine screws from the inside of the door.

From the outside of the door, pull the handle straight out to remove it.

Note – The lock remains in the handle.



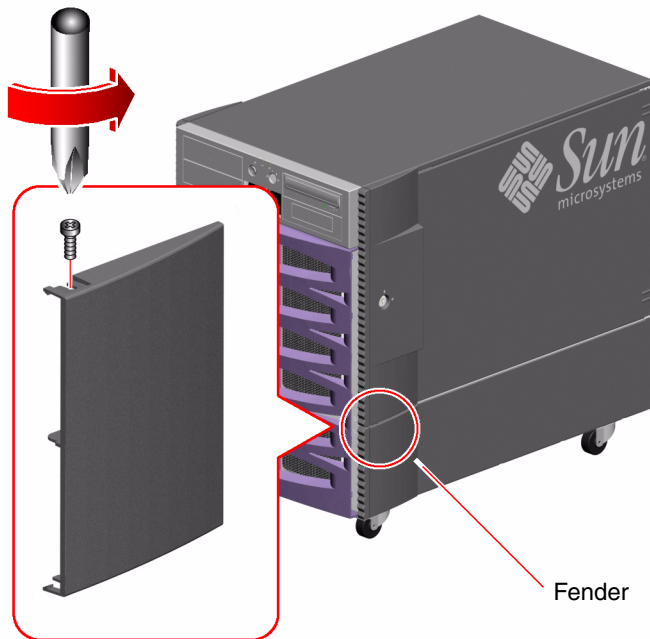
4. Repeat Steps 1 through 3 for the other side door.

5. Place the handles, pawls, and screws into the kit carton for safekeeping.

You will need to reinstall these parts if you reconfigure the server as a deskside unit.

Remove the Fenders and Lower Side Panels

1. Remove the fender from the front of each of the lower side panels.
 - a. Remove the screw from the top of the fender.

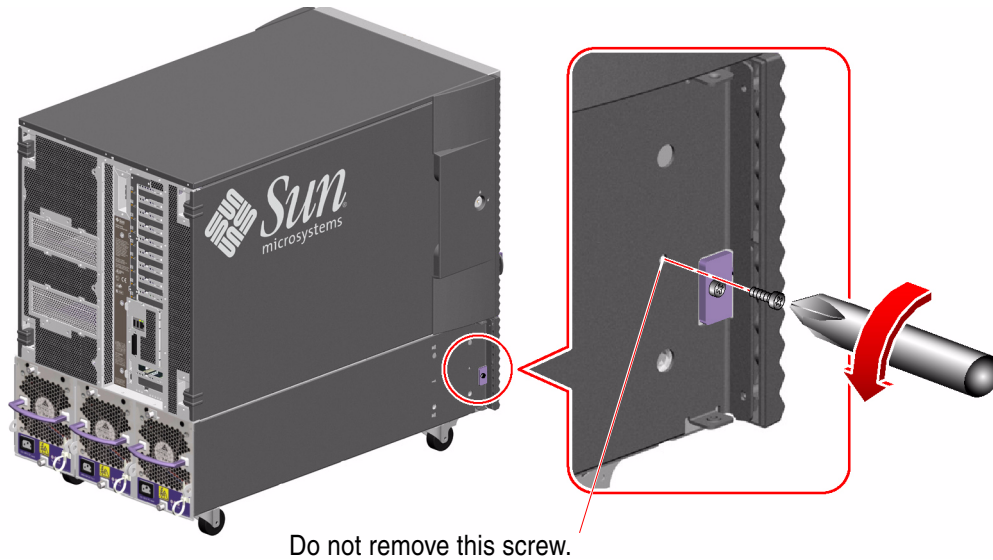


- b. Grasp the top and bottom edges of the fender and carefully flex the fender to remove it.
 - c. Repeat Steps a and b to remove the fender from the other lower side panel.

2. Remove the lower side panel from the left side of the server.

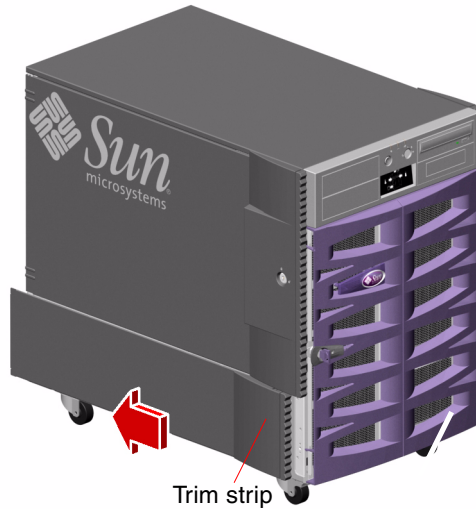
Remove the screw located approximately 3 inches (8 cm) from the front of the lower side panel.

Note – On the left side of the server, do not remove the screw that attaches the small bracket to the side of the server. Removing this screw prevents the front door from closing securely.



Do not remove this screw.

3. **Grasp the trim strip and slide the lower side panel toward the rear of the server.**
The lower side panel should disengage as you slide the panel so that you can easily remove it.

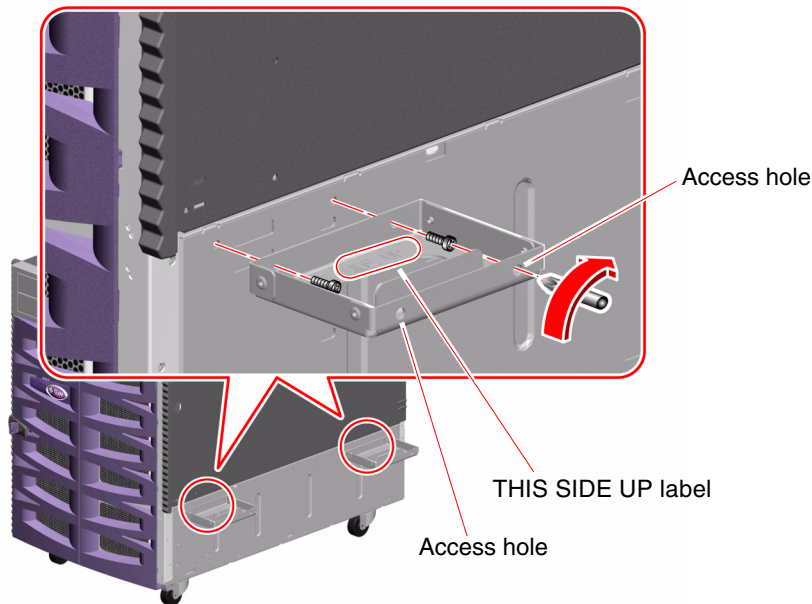


4. **Repeat Steps 2 and 3 for the right lower side panel.**
5. **Place the fenders, lower side panels, and screws into the kit carton for safekeeping.**
You will need to reinstall these parts if you reconfigure the server as a deskside unit.

Install the Lifting Handles

1. Locate the four lifting handles provided with the rackmounting kit.
2. Install two lifting handles on one side of the server using two M4 screws to attach each handle to the lower side of the server.
 - a. With the **THIS SIDE UP** label facing upward, insert the screwdriver through one of the access holes on the outside of the handle.

Using the access hole makes it easier to reach the screw hole on the inside of the handle.
 - b. Position the screw on the inside of the handle in the hole that is opposite the access hole.
 - c. Attach the handle to the server using the appropriate screw hole just below the server side door. See the following figure.
 - d. Finish installing the handle by repeating the procedure using the second access hole on the outside of the handle.
 - e. Repeat Steps a through d for the second handle.



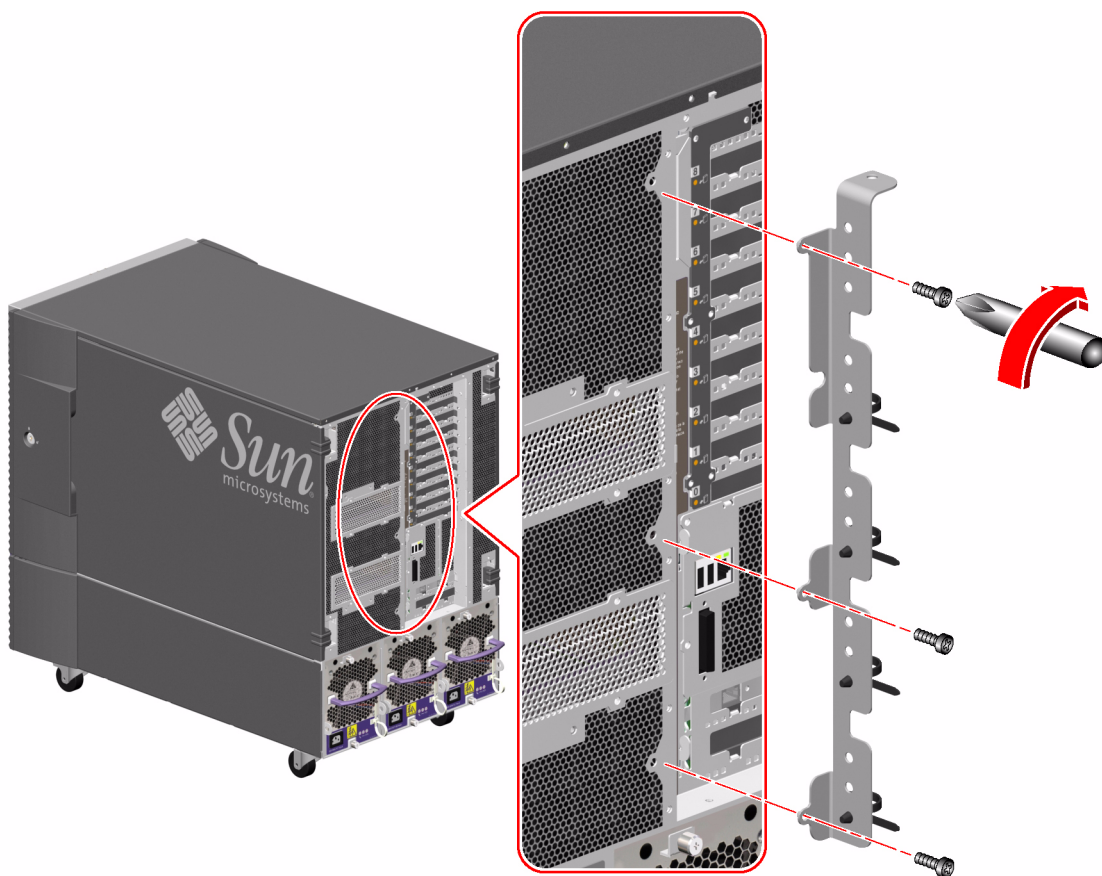
3. Repeat Step 2 to install two handles on the other side of the server.

Attach the Cable Management Bracket to the Server

The cable management bracket that attaches to the back of the server provides strain relief for the cables. See [“Managing Cables” on page 89](#) for general cable management guidelines.

1. Locate the server cable management bracket provided with the rackmounting kit.
2. Attach the cable management bracket to the back of the server.

Attach the cable management bracket using three M4 screws as shown in the following figure.



Preparing the Cabinet

Make sure the operating location complies with the Sun Fire V890 server requirements and the cabinet requirements. See [Appendix A](#) of this guide and the cabinet documentation for information.

1. Be sure the cabinet is stabilized so that the cabinet cannot move or tip forward.

If there are feet beneath the cabinet to prevent it from rolling, be sure the feet are fully extended downward to the floor.

Stabilize the cabinet using the stabilizing mechanisms provided with the cabinet.

See the instructions provided with the cabinet.

2. Open the front and rear doors.

See the instructions provided with the cabinet.

3. Remove (if applicable) the front and rear doors and the side panels of the cabinet.

See the instructions provided with the cabinet.

Installing the Tray Assembly Into the Cabinet

To install the tray assembly into the cabinet, complete these tasks:

- If necessary, adjust the rear brackets on the tray assembly slides for the depth of the cabinet. See [“Adjust the Rear Brackets” on page 75](#).
- Determine the vertical position of the server in the cabinet. See [“Determine the Vertical Position of the Server in the Cabinet” on page 77](#).
- Attach the tray assembly to the cabinet rails. See [“Attach the Tray Assembly to the Cabinet” on page 78](#).

Adjust the Rear Brackets

1. Measure the depth of the cabinet.

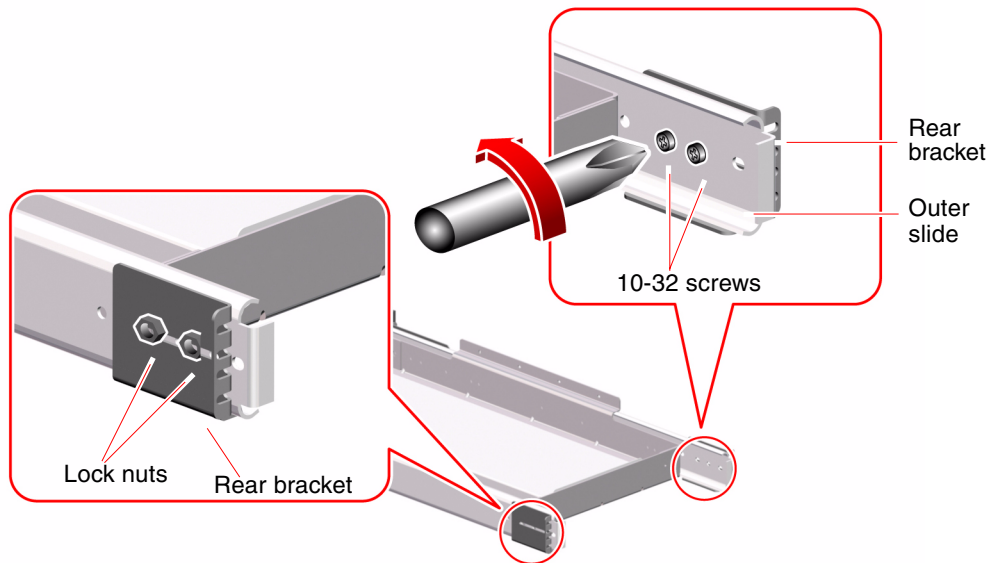
Measure the depth of the cabinet from the outside face of the front rail to the outside face of the rear rail.

2. Measure the length of each slide.

Measure the distance from the inside face of the front bracket to the inside face of the rear bracket. If this measurement is longer or shorter than the cabinet's depth, which you measured in Step 1, you must adjust the rear bracket on each slide to accommodate the depth of the cabinet.

3. Remove the long rear brackets attached to the rack tray assembly outer slides.

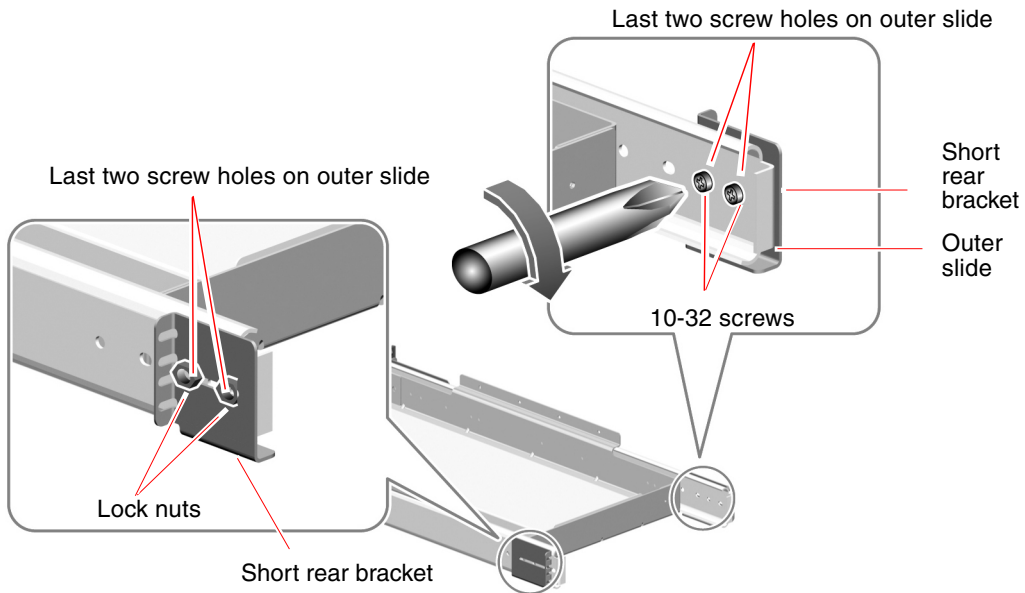
Remove the two 10-32 screws and lock nuts using a Phillips screwdriver.



4. Attach the short rear brackets to the outer slides using two 10-32 screws and lock nuts for each short rear bracket.

Note the orientation of the short brackets in the following illustration. Use the two rearmost available screw holes on the outer slides.

Tighten the two 10-32 screws and lock nuts on each slide to secure the short rear brackets to the outer slides.



Determine the Vertical Position of the Server in the Cabinet

Plan to install the tray assembly into the lowest available position in the cabinet. If you are installing two Sun Fire V890 servers into the cabinet, install the lower server first.

To determine the vertical position of the server, identify which cabinet rail holes to use for attaching the front and rear brackets by completing the following steps:

1. Locate and mark the correct holes on the right and left front vertical cabinet rails.

Make sure there is enough vertical space to install the server.

Note – Each Sun Fire V890 server requires 17 rack units (29.75 inches, 75.6 cm) or 51 holes on the vertical rails of the cabinet. A standard 72-inch (182.8-cm) high cabinet can accommodate two Sun Fire V890 servers.

If the Sun Fire V890 server will be installed immediately above a power sequencer, leave at least one free hole above the sequencer.

Using masking tape or a felt tip pen, mark the lowest available hole for installing the tray on the right front vertical rail of the cabinet. The second free hole is the lowest available hole if you are installing the Sun Fire V890 server immediately above a power sequencer.

Mark the matching hole on the left front rail of the cabinet. Count the holes to be sure you are using matching holes on the right and left rails of the cabinet.

2. Locate and mark the corresponding holes on the right and left rear vertical cabinet rails.

Using masking tape or a pen, mark the matching holes on the right and left rear vertical rails.

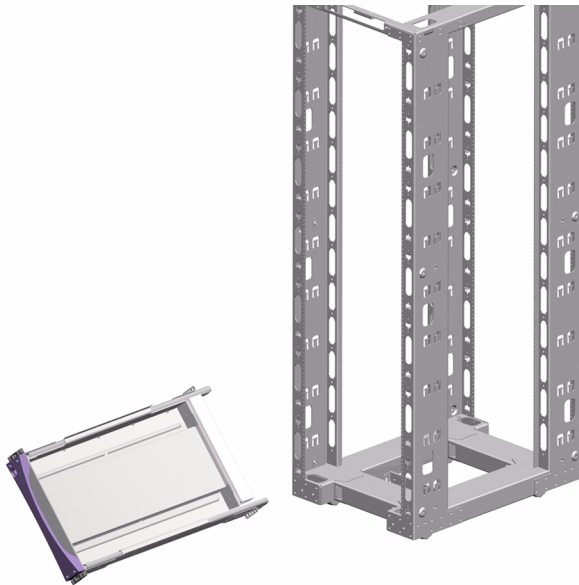
Count the holes to be sure you are using the holes that match the ones you marked in Step 1.

Attach the Tray Assembly to the Cabinet

Using the rail holes you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 77](#), attach the tray assembly to the cabinet by completing the following steps:

1. **Attach the front brackets on the slides of the tray assembly to the front rails of the cabinet.**
 - a. **With the help of an assistant, position the tray assembly on the inside of the cabinet with the front brackets at the front of the cabinet.**

To fit the tray assembly between the rails, you will need to tilt it by lowering one side of the assembly.



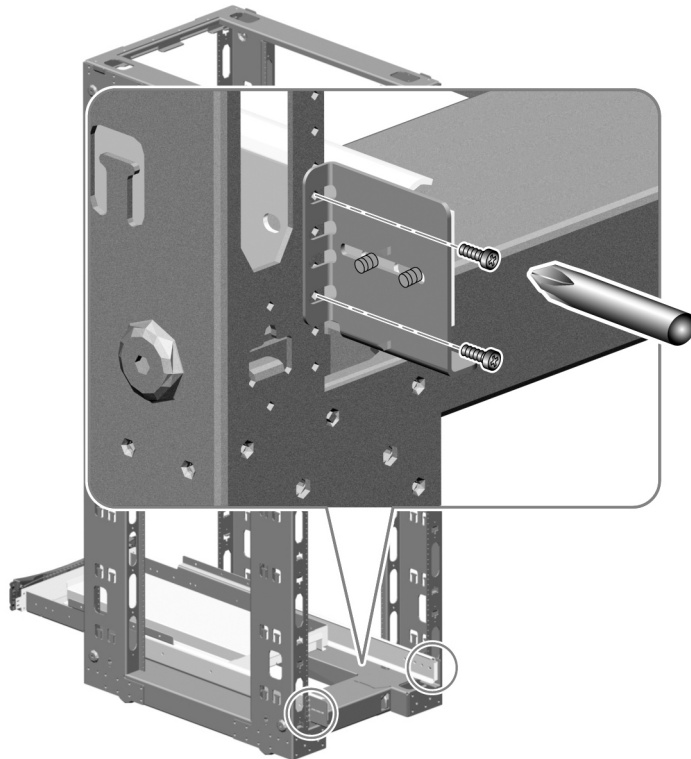
b. Attach the front brackets to the front rails of the cabinet using four 10-32 screws.

Align the lower hole of each front bracket with the front rail holes you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 77](#).

Secure the front brackets using one 10-32 screw in the lower hole of each bracket. Finger-tighten the screws.

Align the upper hole of each front bracket with the corresponding hole in the cabinet rail. Secure the brackets to the rails using one 10-32 screw in each upper hole. Finger-tighten the screws.

Do not tighten the screws completely until all the screws are in place and the tray assembly is level.



2. Attach the rear brackets to the rear rails of the cabinet using four 10-32 screws.

Align the lower hole of each rear bracket with the rail hole you marked in [“Determine the Vertical Position of the Server in the Cabinet” on page 77](#).

Secure the brackets using one 10-32 screw in each lower hole. Finger-tighten the screws.

Align the upper hole of each rear bracket with the coinciding hole in the cabinet rail. Secure the brackets to the rails using one 10-32 screw in each upper hole. Finger-tighten the screws.

Do not tighten the screws completely until all the screws are in place and the tray assembly is level.

3. Make sure the tray assembly is level.

Use a level to ensure the tray assembly is level front-to-back and left-to-right.

Adjust as necessary.

4. Once the tray assembly is level, completely tighten all of the bracket screws.

Tighten the eight 10-32 screws that secure the front and rear brackets to the vertical cabinet rails.

5. Slide the tray assembly in and out of the cabinet to be sure the slides operate smoothly.

Installing the Server Into the Tray Assembly

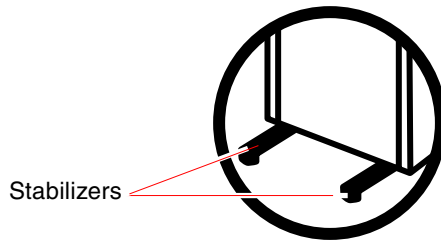
1. Be sure the cabinet is stabilized so that the cabinet cannot move or tip forward when the tray is extended and the server is placed on the tray.

If there are feet beneath the cabinet to prevent it from rolling, be sure the feet are fully extended downward to the floor.

Stabilize the cabinet using the stabilizing mechanisms provided with the cabinet. See the instructions provided with the cabinet.



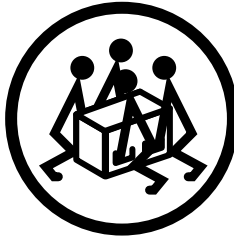
Caution – Before you slide the tray out, be sure the cabinet is stabilized so that it cannot move or tip forward. See the cabinet documentation for information about stabilizing the cabinet.



Some cabinets may be equipped with stabilizers or bolt-down mechanisms. See the cabinet documentation for stabilizing instructions.



Caution – Do not attempt to lift the server until a qualified service technician removes all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server. See [“Preparing the Server” on page 64](#) for information about removing these components.



2. Extend the tray all the way forward.

Standing in front of the cabinet, grasp the tray handle and pull the tray toward you until it stops.

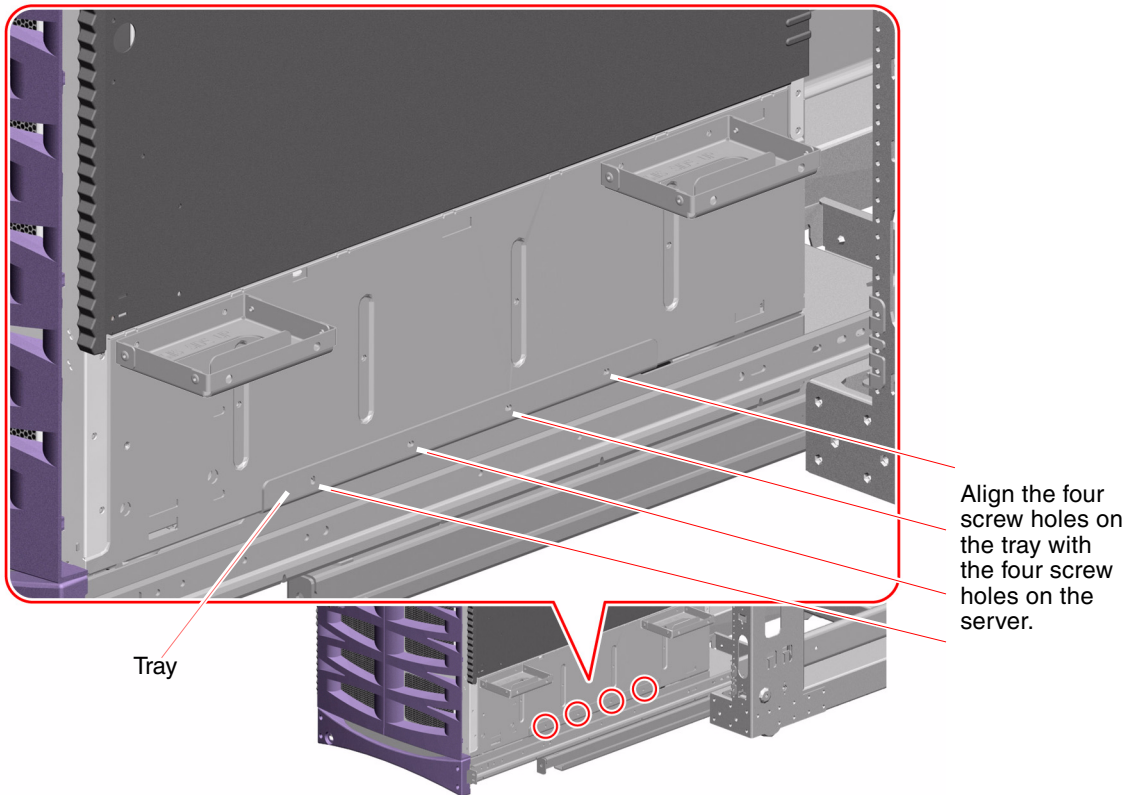


Caution – Do not place your fingers on the tray or under the server while you are lifting the server and positioning it on the tray.

3. Place the server on the tray.

- a. Lift the server (two persons on each side of the server) using the lifting handles that you installed in [“Preparing the Server” on page 64](#).
- b. Position the server on the tray so that the front of the server is at the front of the tray and the back of the server is at the back of the tray.

4. Adjust the server on the tray until the four holes on each side of the server align with the four holes in the tray assembly.



5. Remove the four lifting handles from the sides of the server.

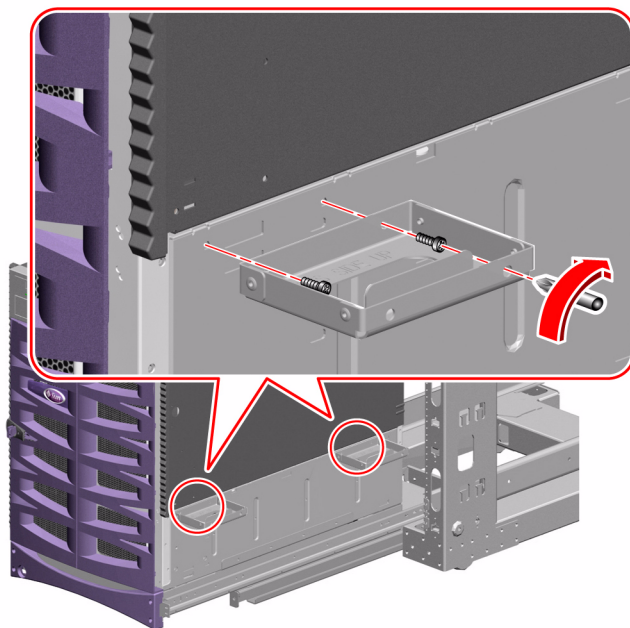
- a. Insert the screwdriver through one of the access holes on the outside of the handle.**

Using the access hole makes it easier to reach the opposite screw hole on the inside of the handle to remove the screw. See the following figure.

- b. Remove the two M4 screws that attach each handle to the server.**

- c. Save the eight M4 screws you remove.**

You will need to use the screws in Step 7.



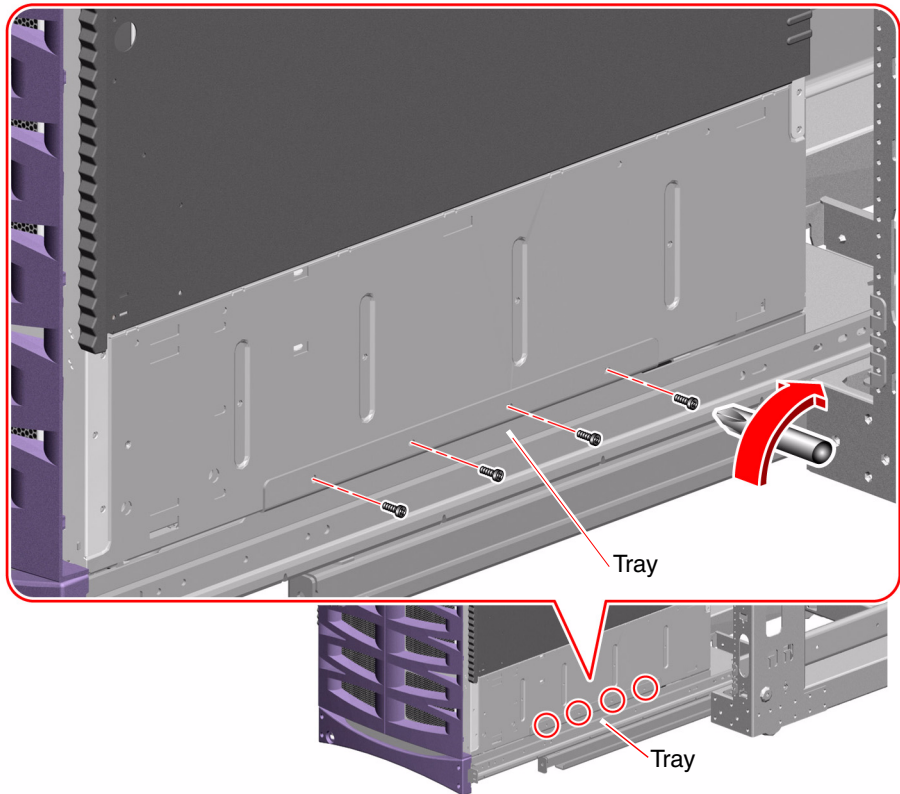
6. Secure the handles to the rack for safekeeping.

You must reattach the handles if you need to remove the server from the cabinet.

7. Secure the server to the tray assembly using the eight M4 screws you removed in Step 5.

Use four M4 screws on each side of the server as shown in the following figure.

Do not tighten the screws until all screws are in place and you check the placement of the server.



8. Check that the server is level and centered on the tray.

Use a level and adjust the server position if necessary.

9. Tighten the eight M4 screws that secure the server to the tray assembly.

Restoring the Server

1. **A qualified service technician must install the CPU/Memory boards and fan trays that were removed before you installed the server into the cabinet.**

See the *Sun Fire V890 Server Service Manual* for instructions to install components.

2. **If you removed the server's side doors, replace them.**



Caution – Avoid keeping the server's doors open for extended periods while the system is operating. Server doors must be closed to prevent automatic thermal shutdown.

3. **Close both of the server's side doors securely.**
4. **Slide the tray assembly into the cabinet.**
5. **Install the power supplies that you removed before you installed the server into the cabinet.**

See the *Sun Fire V890 Server Service Manual* for installation instructions.

Securing the Server in the Cabinet

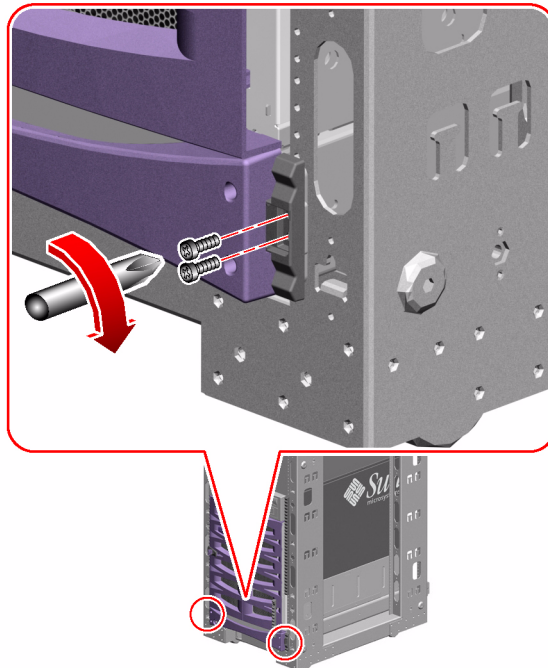
To secure the tray assembly and server in the cabinet, attach the tray handle to the front rails of the cabinet.

1. Attach the tray handle to the front rails of the cabinet.

Use one or two 10-32 screws to attach the tray handle to the front rails.

If each of the two screw holes on each side of the handle aligns with a rail hole, use two 10-32 screws to attach each side of the tray handle to each front rail as shown in the following figure.

If only one screw hole on each side of the handle aligns with a rail hole, use one 10-32 screw to attach each side of the tray handle to each front rail.



2. Locate the Sun Fire V890 server key.

3. Lock the system in the cabinet.

Insert the Sun Fire V890 server key into the keylock on the tray handle and turn the key 90 degrees counterclockwise.

Locking the tray handle extends the security plates so that they cover the screw heads on each side of the tray handle. The security plates prevent removal of the screws that secure the tray and the server to the cabinet.

4. Remove and safeguard the key.

Installing Trim Strips

The lower decorative panels (trim strips) were removed when you removed the lower side panels. To restore the trim strips:

1. **Locate the two trim strips provided in the rackmounting kit.**
2. **Attach one trim strip to the right front cabinet rail and one trim strip to the left front cabinet rail.**

Using the two captive screws, attach each trim strip.

If only one screw on each trim strip aligns with a rail hole, use one screw to attach each trim strip to each front rail.

Restoring the Cabinet

1. **Replace the front and back doors of the cabinet, if applicable.**
See the instructions provided with the cabinet.
2. **If you removed the side panels from the cabinet, do not replace them until you connect and route the server cables.**



Caution – To prevent the cabinet from tipping forward, do not attempt to roll or move the cabinet after installing the server in the cabinet.

Managing Cables

You will need to develop a cable management scheme that is customized for your installation. The Sun Fire V890 server rackmounting kit provides several tools that may aid you in managing the server power cords and cables:

- Server cable management bracket (with integrated releasable tie wraps) that attaches to the rear of the server. See [“Attach the Cable Management Bracket to the Server” on page 73](#).
- Cabinet cable management bracket (with separate releasable tie wraps) that attaches to the rear of the cabinet. See [“Attach the Cable Management Bracket to the Cabinet” on page 90](#).
- Three universal power jumper cords that enable you to provide additional slack in the server power cords. See the following general guidelines for more information.

In addition, some cabinets have cable management features or optional cable management accessories.

The following general guidelines describe techniques for routing and managing the server cables:

- Allow enough slack in the server power cords and cables so that the tray assembly can be fully extended from the front of the cabinet for service access. If the server power cords are too short for your particular installation, three universal jumper cords, provided with the rackmounting kit, allow you to gain the additional slack needed. One end of a jumper cord plugs in to a Sun Fire V890 server power supply; the other end of the jumper cord plugs in to a Sun Fire V890 server power cord. The server power cord then plugs in to an AC power source.
- To prevent bending or pinching of the cables when the tray assembly is fully extended, be sure all cables are kept clear of the slides and other obstructions.

- When connecting the power jumper cords to the server's power cords, use tie wraps to secure each connection, as shown below.



Attach the Cable Management Bracket to the Cabinet

The cable management bracket that attaches to the rear of the cabinet provides strain relief for the power cord and other server cables. Releasable tie wraps provided with the rackmounting kit can be used to secure the cables. See [“Managing Cables” on page 89](#) for general cable management guidelines.

To attach the cable management bracket to the rear of the cabinet, complete the following steps:

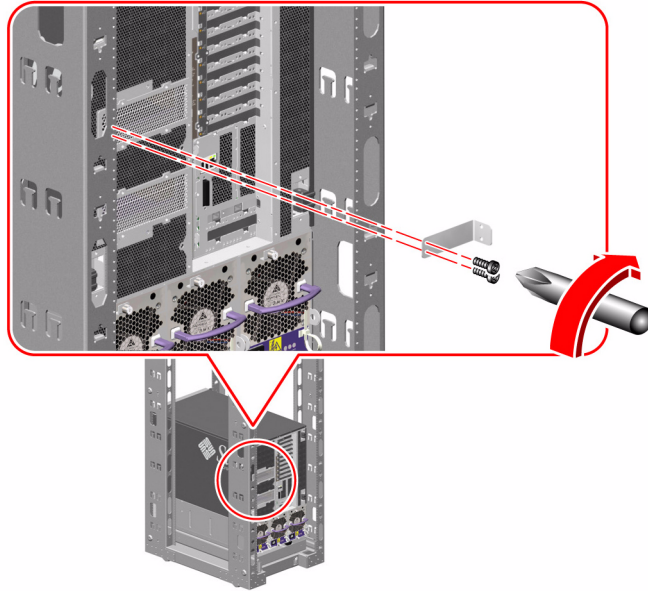
- 1. Locate the cable management bracket for the cabinet.**

This bracket is provided with the rackmounting kit.

2. Attach the bracket to one of the rear rails of the cabinet, as shown in the following figure.

Use two 10-32 screws to attach the bracket to the cabinet rail.

You can attach the bracket to either the right or left rear rail of the cabinet and at any location on the rail that suits your cable management scheme.



What Next

Connect the server power cords, network cables, and I/O interface cables to the server and route the cables, allowing enough slack for service access. See “How to Install the Sun Fire V890 Server” in the *Sun Fire V890 Server Owner’s Guide*.

Note – A grounding screw is located just above the server’s center power supply. Be sure to ground the server to the cabinet using an appropriate grounding strap. Proper grounding prevents ground loops between systems and peripherals and helps guard against possible data loss.

Requirements for 19-Inch Cabinets

The server can be installed into a 19-inch (48.26-cm) wide EIA-compliant cabinet that meets the requirements listed in the table below. You need one Sun Fire V890 server rackmounting kit for each Sun Fire V890 server that you will install into a cabinet.

Cabinet Feature	Requirement
Load-Bearing Capacity	The cabinet must firmly support the weight of a Sun Fire V890 server and the mounting hardware (up to 350 lb, 158.8 kg, depending on the server configuration), plus the weight of any other installed devices.
Anti-Tilt Protection	The cabinet must be bolted securely to the floor or equipped with a sturdy and extendable anti-tip leg. You must prevent the cabinet from moving or tilting forward when one or more systems or devices are fully extended from the front of the cabinet.
Vertical Space	Each server requires 17 rack units (29.75 inches, 75.6 cm) of vertical space for cabinet installation.
Minimum Service Access	<p>An area not less than 36 inches (91 cm) deep must be available in back of the cabinet for server installation and service access.</p> <p>An area not less than 48 inches (122 cm) deep must be available in front of the cabinet for server installation and server access.</p> <p>An area not less than 36 inches (91 cm) wide must be available on each side of the server when the server is fully extended on the tray assembly.</p> <p>When fully extended on the tray assembly, the server will protrude 32.9 inches (83.6 cm) forward of the cabinet's front vertical mounting rails.</p>

Cabinet Feature	Requirement
Airflow	<p>For proper ventilation of the server, the front and rear doors must comply with the following minimum open area requirements.</p> <ul style="list-style-type: none"> • 60 percent of the area of the front door that is directly in front of the server must be open. • 63 percent of the area of the rear door that is directly behind the server must be open. <p>If the doors of the cabinet do not meet the open area requirements, remove the door or doors that do not comply.</p>
Vertical Mounting Rails	<p>The cabinet must have two pairs of vertical mounting rails (one pair in front, one in back) that conform to the EIA (RETMA) standard for mounting hole spacing.</p> <p>Front-to-rear rail spacing must be at least 32 inches (81.3 cm) and not more than 36 inches (91.4 cm) from the outside face of the front rail to the outside face of the rear rail.</p> <p>Front and rear vertical rail mounting faces must be parallel to each other and to the front plane of the cabinet.</p>
Doors and Panels	<p>Depending on your cabinet, you may need to remove the front and rear doors and side panels to access the server or to provide proper ventilation. See Minimum Service Access requirements and Airflow requirements given previously in this appendix.</p> <p>See the instructions provided with the cabinet for information about removing the front and rear doors and side panels from the cabinet.</p>
EMI	<p>Electromagnetic interference (EMI) shielding requirements are met by the system chassis and metal side doors, which must remain in place when the unit is installed in the cabinet.</p>
Fire Containment	<p>The cabinet must meet Underwriters Laboratories, Inc. and TUV Rheinland of N.A. requirements for fire containment.</p>

Requirements for Sun Rack 900 Cabinets

The table below lists the specifications of the Sun Rack 900 cabinet and the operating location that are applicable to the rack installation requirements of the Sun Fire V890 server. You need one Sun Fire V890 server rackmounting kit for each Sun Fire V890 server that you will install into the Sun Rack 900 cabinet.

Cabinet Feature	Requirement
Load-Bearing Capacity	The Sun Rack 900 cabinet firmly supports the weight of two Sun Fire V890 servers and the mounting hardware (up to 700 lb, 317.6 kg, depending on the server configuration).
Anti-Tilt Protection	The Sun Rack 900 cabinet provides several anti-tilt features, including a sturdy anti-tip bar that prevents the cabinet from moving or tilting forward when one or more systems or devices are fully extended from the front of the cabinet.
Vertical Space	The Sun Rack 900 cabinet provides 38 rack units of vertical space. Each Sun Fire V890 server requires 17 rack units (29.75 inches, 75.6 cm) of vertical space for cabinet installation.
Minimum Service Access	<p>An area not less than 3 feet (91 cm) deep must be available in back of the cabinet for server installation and service access.</p> <p>An area not less than 48 inches (122 cm) deep must be available in front of the cabinet for server installation and server access.</p> <p>An area not less than 36 inches (91 cm) wide must be available on each side of the server when the server is fully extended on the tray assembly.</p> <p>When fully extended on the tray assembly, the server will protrude 32.9 inches (83.6 cm) forward of the cabinet's front vertical mounting rails.</p>

Cabinet Feature	Requirement
Airflow	<p>For proper ventilation of the server, the front and rear doors of the Sun Rack 900 cabinet comply with the following minimum open area requirements.</p> <ul style="list-style-type: none"> • 60 percent of the area of the front door that is directly in front of the server is open. • 63 percent of the area of the rear door that is directly behind the server is open. <p>The doors of the Sun Rack 900 cabinet meet the open area requirements of the Sun Fire V890 server.</p>
Vertical Mounting Rails	<p>The Sun Rack 900 cabinet has two pairs of vertical mounting rails (one pair in front, one in back) that conform to the EIA (RETMA) standard for mounting hole spacing.</p> <p>Front-to-rear rail spacing of the Sun Rack 900 cabinet is 27 inches (68.58 cm) from the outside face of the front rail to the outside face of the rear rail.</p> <p>Front and rear vertical rail mounting faces of the Sun Rack 900 cabinet are parallel to each other and to the front plane of the cabinet.</p>
EMI	<p>Electromagnetic interference (EMI) shielding requirements are met by the system chassis and metal side doors, which must remain in place when the unit is installed in the cabinet.</p>
Fire Containment	<p>The Sun Rack 900 cabinet meets Underwriters Laboratories, Inc. and TUV Rheinland of N.A. requirements for fire containment.</p>