



# Sun Fire™ V490 Server Parts Installation and Removal Guide

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Sun Microsystems, Inc.  
[www.sun.com](http://www.sun.com)

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# Declaration of Conformity

Compliance Model Number: 490  
Product Family Name: Sun Fire V490

## EMC

### European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

*As Telecommunication Network Equipment (TNE) in both Telecom Centers and Other Than Telecom Centers per (as applicable):*

EN300-386 V.1.3.1 (09-2001) Required Limits:

EN55022/CISPR22	Class A
EN61000-3-2	Pass
EN61000-3-3	Pass
EN61000-4-2	6 kV (Direct), 8 kV (Air)
EN61000-4-3	3 V/m 80-1000MHz, 10 V/m 800-960 MHz and 1400-2000 MHz
EN61000-4-4	1 kV AC and DC Power Lines, 0.5 kV Signal Lines,
EN61000-4-5	2 kV AC Line-Gnd, 1 kV AC Line-Line and Outdoor Signal Lines, 0.5 kV Indoor Signal Lines > 10m.
EN61000-4-6	3 V
EN61000-4-11	Pass

*As Information Technology Equipment (ITE) Class A per (as applicable):*

EN55022:1998/CISPR22:1997 Class A

EN55024:1998 Required Limits:

EN61000-4-2	4 kV (Direct), 8 kV (Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
EN61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines, 2 kV AC Line-Gnd, 0.5 kV DC Power Lines
EN61000-4-6	3 V
EN61000-4-8	1 A/m
EN61000-4-11	Pass

EN61000-3-2:1995 + A1, A2, A14 Pass

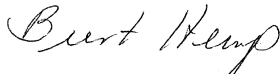
EN61000-3-3:1995 Pass

**Safety:** This equipment complies with the following requirements of the Low Voltage Directive 73/23/EEC:

EC Type Examination Certificates:

EN 60950-1:2001	TÜV Rheinland Certificate No. S72040123
IEC 60950-1:2001	CB Scheme Certificate No. <i>-on file-</i>
Evaluated to all CB Countries	
UL 60950-1, First Edition; CSA C22.2 No. 60950-00	File: E113363
FDA DHHS Accession Number (Monitor Only)	

**Supplementary Information:** This product was tested and complies with all the requirements for the CE Mark.



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July 5, 2004

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# Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

## FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**Shielded Cables:** Connections between the workstation and peripherals must be made using shielded cables to comply with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

**Modifications:** Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

## FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

**Shielded Cables:** Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

**Modifications:** Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

## ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.


### VCCI 基準について

#### クラス A VCCI 基準について

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警告使用者：  
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# Preface

---

The *Sun Fire V490 Server Parts Installation and Removal Guide*, which includes detailed service procedures for the Sun Fire™ V490 server, is intended to be used by technicians, system administrators, qualified Sun service providers, and advanced computer system end users who have experience removing and installing server hardware.

For information about the Sun Fire V490 server and detailed instructions for installing, configuring, and administering the server and for diagnosing problems with the server, see your *Sun Fire V490 Server Administration Guide*.

This book does not cover mounting the server in a 4-post cabinet or 2-post rack. For those instructions, see the *Sun Fire V490 Server Setup and Rackmounting Guide*. Rackmounting instructions are also printed on labels on the server chassis.

---

## Before You Read This Book

Follow the instructions for mounting the server in a 4-post cabinet or 2-post rack before continuing with the installation and configuration instructions in this manual.

---

**Note** – This book does not contain troubleshooting or diagnostics information. For troubleshooting and diagnostics, see your *Sun Fire V490 Server Administration Guide*.

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# How This Book Is Organized

The procedures in this book are organized as follows:

- **Before You Begin**—This section lists the procedures that you must complete before proceeding to the next section. Complete these prerequisite procedures in the sequence in which they are printed.
- **What to Do**—This section contains the current procedure. Complete the steps in the sequence in which they are printed, paying special attention to notes and cautions.
- **What Next**—This section contains the procedures you must complete to return the system to operation. Complete these procedures in the sequence in which they are printed.

This book contains the following chapters and appendixes:

- Chapter 1 illustrates the front panel controls and LED indicators.
- Chapter 2 contains procedures for powering on and powering off the system. In addition, it describes how to prepare the system for service, including the tools required, and how to avoid electrostatic discharge.
- Chapter 3 contains procedures for servicing components on the front panel, including disk drives and power supplies.
- Chapter 4 contains procedures for servicing the CPU-side components, including installing memory.
- Chapter 5 contains procedures for servicing the PCI riser board and associated components, including PCI cards and the system controller card.
- Chapter 6 contains procedures for servicing the centerplane, FC-AL backplane, removable media assembly, and power distribution board.
- Chapter 7 contains procedures for servicing cables, including how to route cables in the system.
- Appendix A describes service procedures for a system installed in a 2-post rack.
- Appendix B is a reference for connector pinouts.
- Appendix C lists physical and environmental specifications.
- Appendix D contains safety information.
- Appendix D is a reference for board connectors.
- Appendix E contains an illustrated parts breakdown, as well as a reference for field-replaceable unit (FRU) numbers.



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# Using UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at <http://docs.sun.com>

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# Typographic Conventions

Typeface	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output	% <b>su</b> Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type <code>rm filename</code> .

---

# Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

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## Related Documentation

The following table describes the documentation shipped with the Sun Fire V490 server.

Application	Title	Part Number	Format
Site Planning	<i>Site Planning Guide for Entry-Level Servers, Version 1.5</i>	816-1613	PDF, HTML
	<i>Sun Fire V490 Server 4-Post Rackmounting Overview</i>	817-6884	PRINT
Rack installation	<i>Sun Fire V490 Server Setup and Rackmounting Guide</i>	817-3959	PDF, HTML
Service	<i>Sun Fire V490 Server Parts Installation and Removal Guide</i>	817-3952	PDF, HTML
Administration, configuration, diagnostics and troubleshooting	<i>Sun Fire V490 Server Administration Guide</i>	817-3956	PDF, HTML
Remote System Control (RSC) software	<i>Sun Remote System Control (RSC) 2.2.2 User's Guide</i>	816-3314	HTML
Late-breaking information	<i>Sun Fire V490 Server Product Notes</i>	817-4193	PDF, HTML
	<i>Sun Remote System Control (RSC) 2.2.2 Release Notes</i>	816-3995	PDF, HTML

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Please include the title and part number of your document with your feedback:

*Sun Fire V490 Server Parts Installation and Removal Guide*, part number 817-3952-10



# Identifying Front and Back Panel Features

---

This chapter contains the following sections:

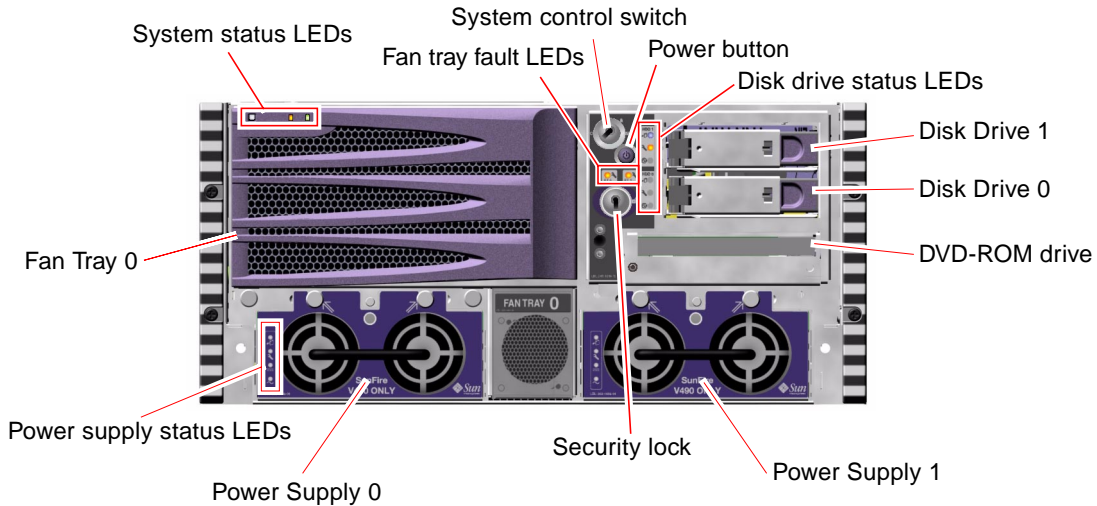
- “Locating Front Panel Features” on page 2
- “Locating Back Panel Features” on page 10

For background information about the Sun Fire V490 server and detailed instructions for installing, configuring, and administering the server and for diagnosing problems with the server, see your *Sun Fire V490 Server Administration Guide*.

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# Locating Front Panel Features

The illustration below shows the system features that you can access from the front panel. In the illustration, the media door and power supply access panel are removed.



For information about front panel controls and LEDs, see “Front Panel LEDs” on page 3.

Two locks control access to the system. The front panel security lock controls access to all front panel components, including the system control switch, Power button, disk drives, power supplies, and Fan Tray 0. The top panel lock controls access to both the CPU access panel and the PCI access panel, and all internal components. These two locks operate independently.

---

**Note** – The same key operates the security lock, system control switch, and system top panel lock.

---

The standard system is configured with two power supplies, which are accessible from the front of the system. See “Front Panel LEDs” on page 3 for additional details.

# Front Panel LEDs

Several front panel LEDs provide general system status, alert you to system problems, and help you to determine the location of system faults.

During system startup, LEDs are individually toggled on and off to verify that each one is working correctly, and may blink during some phases of the firmware system test and initialization process. Other LEDs located on the front of the system work in conjunction with specific Fault LED icons. For example, a fault in the disk subsystem illuminates the disk drive Fault LED next to the affected disk drive. Since all front panel status LEDs are powered by the system's 5-volt standby power source, Fault LEDs remain lit for any fault condition that results in a system shutdown.

## System Status LEDs

At the top left of the system as you look at its front are three system status LEDs. The Power/OK LED and the system Fault LED provide a snapshot of the overall system status. The Locator LED helps you to quickly locate a specific system even though it may be one of dozens or even scores of systems in a room. The Locator LED is at the far left in the cluster, and is lit by command from the administrator.




System status LEDs



Each system status LED has a corresponding LED on the back panel.

Listed from left to right, the system status LEDs operate as described in the following table.

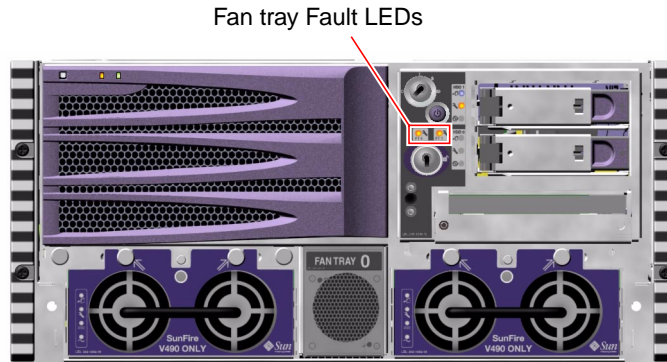
**TABLE 1-1** System Status LEDs

Icon	Name	Description
	Locator	This white LED is lit by Sun Management Center (Sun MC) or Sun Remote System Control (RSC) software, or by Solaris command, to locate a system. See the <i>Sun Fire V490 Server Administration Guide</i> for information about turning on the Locator LED.
	Fault	<p>This amber LED lights steadily when a system fault is detected. For example, the system Fault LED lights when a fault occurs in a power supply, disk drive, or cooling fan.</p> <p>In addition to the system Fault LED, other fault LEDs may also be lit, depending on the nature of the fault. If the system Fault LED is lit, check the status of other fault LEDs on the front panel to determine the nature of the fault.</p> <p>During the boot process, this LED <i>flashes</i> for approximately three seconds. If you press the Power button twice within the three seconds, the system will come up with factory default safe mode IDPROM variable settings, returning the system to the ok firmware prompt. See your <i>Sun Fire V490 Server Administration Guide</i> for more information, and for information about troubleshooting your server.</p>
	Power/OK	This green LED lights continuously when the system power is on.





## Fan Tray Fault LEDs

Each fan tray has a corresponding Fault LED, located below the system control switch.



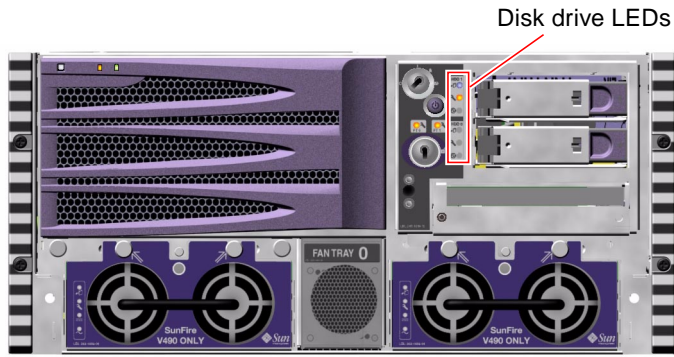
Listed from left to right, the fan tray fault LEDs operate as described in the following table.

**TABLE 1-2** Fan Tray Fault LEDs

Icon	Name	Description
	FT 0 Fault	This amber LED lights when the system hardware or system software has detected a fault in Fan Tray 0 (CPU fan tray).
	FT 1 Fault	This amber LED lights when the system hardware or system software has detected a fault in Fan Tray 1 (PCI fan tray).




## Disk Drive Status LEDs

Each disk drive has its own status LEDs.



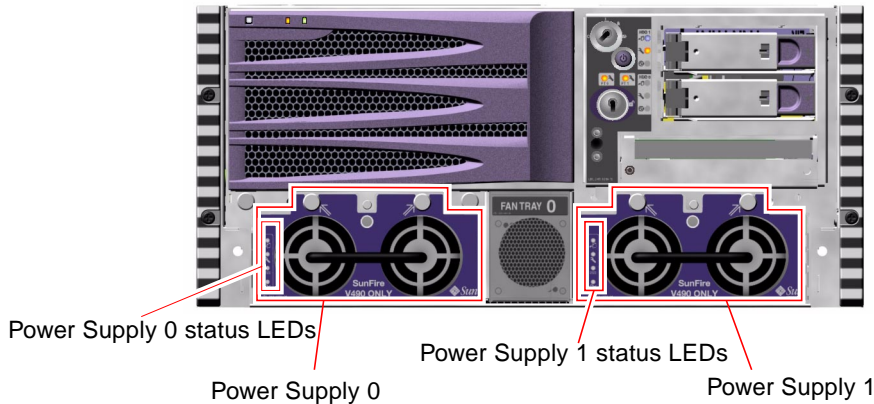
Listed from top to bottom, the disk drive LEDs operate as described in the following table.

**TABLE 1-3** Disk Drive LEDs

Icon	Name	Description
	OK-to-Remove	This blue LED lights when the disk drive has been taken offline and is ready to remove.
	Fault	This amber LED lights when the system hardware or system software has detected a disk drive fault. If a disk drive Fault LED is lit, the system Fault LED will also be lit.
	Activity	This green LED is lit when the system is on and a disk drive is present, and flashes when the disk drive is reading or writing data.

## Power Supply LEDs

Each power supply has its own status LEDs.



Each power supply LED has a corresponding LED on the back panel.

Listed from top to bottom, the power supply LEDs operate as described in the following table.

**TABLE 1-4** Power Supply LEDs

Icon	Name	Description
	OK-to-Remove	This blue LED lights when the power supply is safe to remove.
	Fault	This amber LED lights when a power supply fault is detected. If a power supply Fault LED is lit, the system Fault LED will also be lit.
	DC Present	This green LED is lit when DC output power is available.
	AC Present	This green LED is lit when AC input power is present. This LED is lit if the corresponding AC cable is plugged in to a power source and the power supply is functioning correctly, regardless of system power status.

## Power Button

The system Power button is recessed to prevent accidentally turning the system on or off. The ability of the Power button to turn the system on or off is controlled by the system control switch.

If the operating system is running, pressing and releasing the Power button initiates a graceful software system shutdown. Pressing and holding in the Power button for five seconds causes an immediate hardware shutdown.



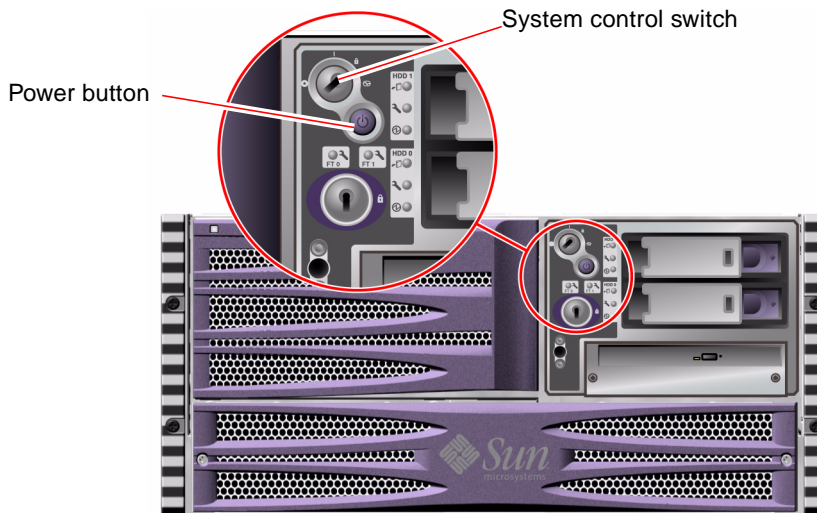
---

**Caution** – Whenever possible, you should use the graceful shutdown method. Forcing an immediate hardware shutdown may cause disk drive corruption and loss of data.

---





## System Control Switch

The four-position system control switch on the system's status and control panel controls the power-on modes of the system, initiates service mode on next system reset, and prevents unauthorized users from powering off the system or reprogramming system firmware. In the following illustration, the system control switch is in the Locked position.



The following table describes the function of each system control switch setting.

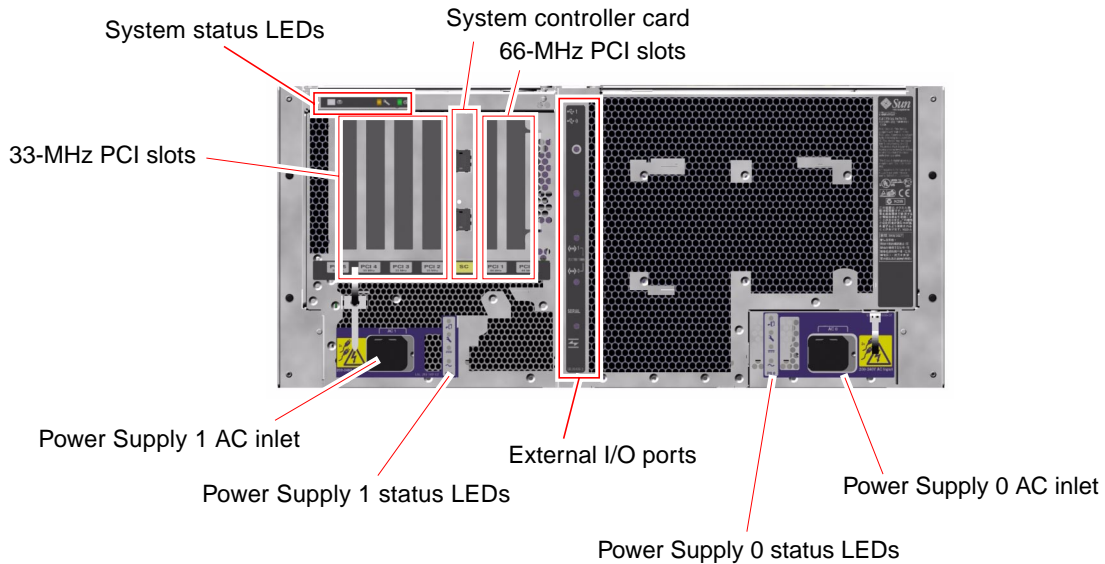
**TABLE 1-5** System Control Switch Settings

Icon	Position	Description
	Normal	This setting enables the system Power button to power the system on or off.
	Locked	<p>This setting disables the system Power button to prevent unauthorized users from locally powering the system on or off. It also disables the keyboard Stop-A command, terminal Break key command, and ~# tip window command, preventing users from suspending system operation to access the system ok prompt. You can still power off the system remotely using a system controller console.</p> <p>The Locked setting, used for normal day-to-day operations, also prevents unauthorized programming of the system Boot PROM.</p>
	Diagnostics	This setting enables service mode, a Sun-prescribed level of power-on self-test (POST) and OpenBoot™ Diagnostics tests to run during system startup and system resets. The Power button functions the same as when the system control switch is in the Normal position.
	Forced Off	<p>This setting forces the system to power off immediately and to enter 5-volt standby mode. It also disables the system Power button. You may want to use this setting when AC power is interrupted and you do not want the system to restart automatically when power is restored. With the system control switch in any other position, if the system were running prior to losing power, it restarts automatically once power is restored.</p> <p>The Forced Off setting also prevents a system controller console from restarting the system. However, the system controller card continues to operate using the system's 5-volt standby power.</p>

---

# Locating Back Panel Features

The illustration below shows the system features that are accessible from the back panel.

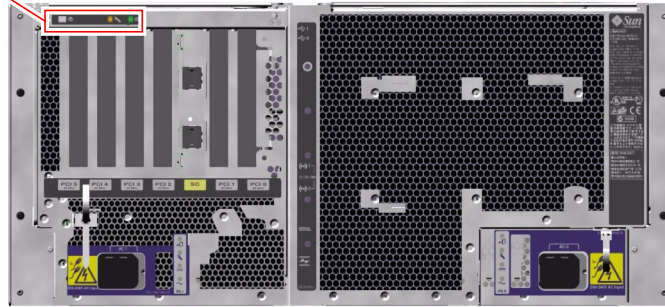


## Back Panel LEDs

### System Status LEDs

The back panel system status LEDs consist of the Power/OK LED, the system Fault LED, and the Locator LED. These LEDs are located in the top-left corner of the back panel, and operate as described in TABLE 1-1.

System status LEDs



## Ethernet Connection LEDs

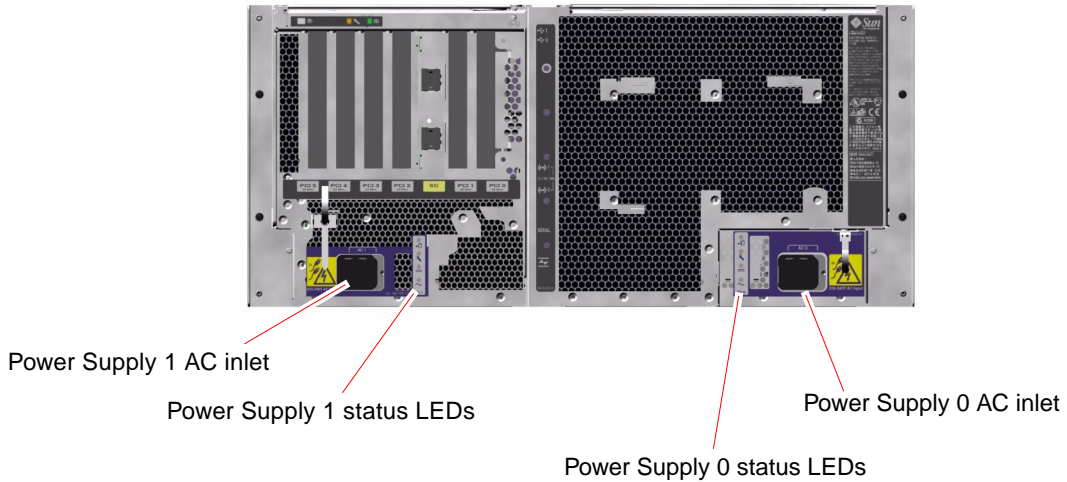
A set of Ethernet connection LEDs is located near each Ethernet port. The Ethernet connection LEDs operate as described in the following table.

**TABLE 1-6** Ethernet Connection LEDs

Name	Description
Link Up	This green LED is lit when an Ethernet connection is present.
Activity	This amber LED flashes when an Ethernet connection is active, that is, transmitting or receiving data.

## Power Supply LEDs

Each power supply has a corresponding set of four LEDs on the back panel.



These LEDs operate as described in TABLE 1-4.

---

**Note** – Power Supply 1 LEDs are located on the left, and Power Supply 0 LEDs are on the right. This is opposite to the arrangement of the power supply status LEDs on the front panel.

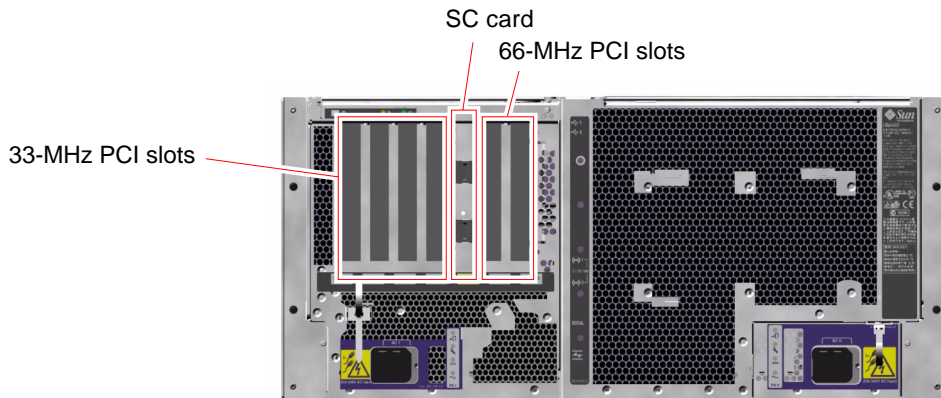
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# Back Panel Slots and Ports

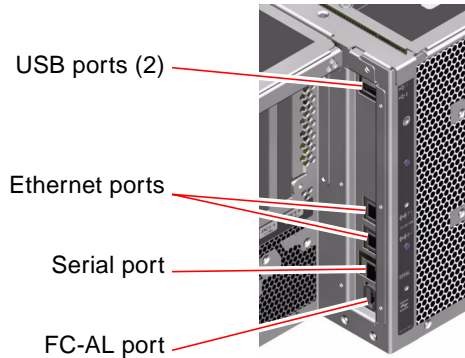
## PCI Slots

The Sun Fire V490 server has four 33-MHz PCI slots and two 66-MHz slots; these are labeled on the back panel. The system controller (SC) card is located between the low-speed and high-speed slots.






## External Ports

The Sun Fire V490 server has six external data ports on the back panel.



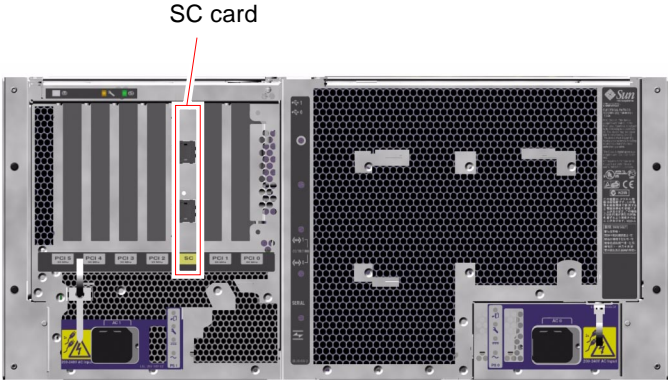
These external ports are described in TABLE 1-7.

**TABLE 1-7** Back Panel External Ports

Icon	Description
	Universal Serial Bus (USB) ports. The Sun Fire V490 has two USB ports.
	Ethernet ports. The system has two Ethernet ports.
<b>SERIAL</b>	Serial port. The system has one serial port on the back panel, which uses an RJ-45 connector.
	Fibre Channel-Arbitrated Loop (FC-AL) external loop.


# System Controller (SC) Card Ports

The system controller (SC) card has two connectors.



The system controller card connectors are described in TABLE 1-8.

**TABLE 1-8** SC External Ports

Icon	Description
SERIAL	Serial (RJ-45) port
	Ethernet port



## Preparing to Service the System

---

This chapter describes service procedures. It contains the following sections:

- “Tools Required for Installation and Service” on page 18
- “How to Power On the System” on page 18
- “How to Power Off the System” on page 22
- “How to Initiate a Reconfiguration Boot” on page 23
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Slide the System Out of a Fully Populated Cabinet” on page 29
- “How to Slide the System Into the Cabinet” on page 31
- “How to Remove the System From the Cabinet” on page 33
- “How to Install the System Into the Cabinet” on page 36
- “How to Avoid Electrostatic Discharge” on page 41

---

**Note** – If you are servicing a system installed in a 2-post rack, see Appendix A.

---

### Guidelines

Be sure to keep the following guidelines in mind:

- Except for removing and installing disk drives, this system must be serviced only by qualified service providers.
- Power supplies are hot-swappable. For information about hot-swapping, see “About Hot-Swappable and Hot-Pluggable Components” on page 46.
- Internal disk drives are hot-pluggable. For information about hot-plugging, see “About Hot-Swappable and Hot-Pluggable Components” on page 46.
- For servicing any other parts internal to the system, you must first power off the system. See “How to Power Off the System” on page 22.

---

# Tools Required for Installation and Service

The following tools are required to service the system:

- Screwdriver, standard Phillips No. 1
- Screwdriver, standard Phillips No. 2
- Screwdriver, long Phillips No. 2 (shaft at least 8 inches (20 cm) long)
- Needle-nose pliers
- Adjustable wrench
- Electrostatic discharge (ESD) mat, Sun part number 250-1088, or equivalent
- Grounding wrist or foot strap

The latter two items help protect the server against damage due to electrostatic discharge. For more information, see “How to Avoid Electrostatic Discharge” on page 41.

---

# How to Power On the System

## Before You Begin

Do not use this power-on procedure if you have just added any new internal option or external storage device, or if you have removed a storage device without replacing it. To power on the system under those circumstances, see:

- “How to Initiate a Reconfiguration Boot” on page 23



---

**Caution** – Never move the system when the system power is on. Movement can cause catastrophic disk drive failure. Always power off the system before moving it.

---



---

**Caution** – Before you power on the system, make sure that all access panels are properly installed.

---

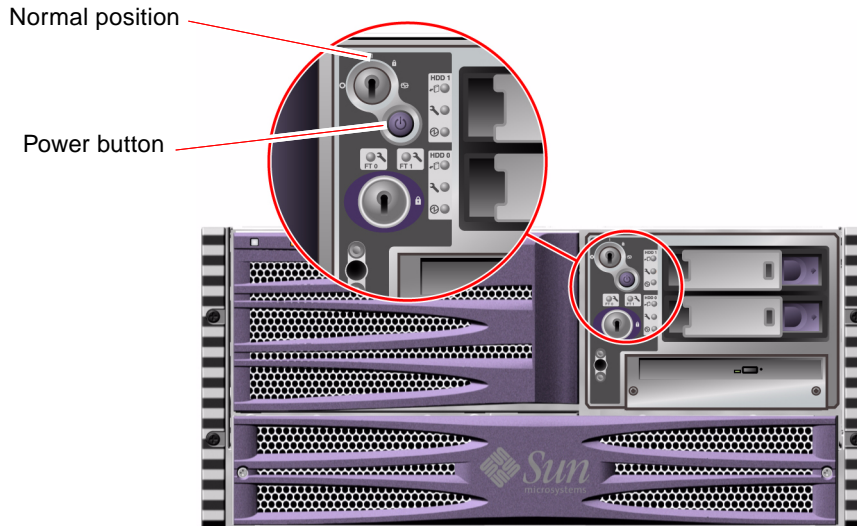
# What to Do

1. **Turn on power to any peripherals and external storage devices.**  
Read the documentation supplied with the device for specific instructions.
2. **Turn on power to the ASCII terminal or local graphics terminal, if present.**
3. **Open the media door.**  
Use the system key to unlock the media door.



4. Insert the system key into the system control switch and turn the system control switch to the Normal position.

See “System Control Switch” on page 8 for information about each system control switch setting.



5. Press the Power button that is below the system control switch to power on the system.

---

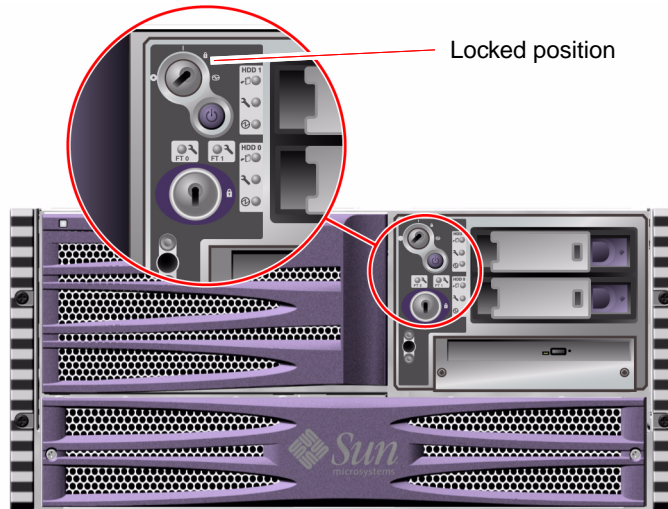
**Note** – The system may take anywhere from 30 seconds to 20 minutes before video is displayed on the system monitor or the ok prompt appears on an attached terminal. This time depends on the system configuration (number of processors, memory modules, PCI cards) and the level of power-on self-test (POST) and OpenBoot™ Diagnostics tests being performed.

---



**6. Turn the system control switch to the Locked position.**

This prevents anyone from accidentally powering off the system.



**7. Remove the system key from the system control switch and keep it in a secure place.**

## What Next

To power off the system, complete this task:

- “How to Power Off the System” on page 22

---

# How to Power Off the System

## Before You Begin

Applications running on the Solaris™ Operating System (Solaris OS) can be adversely affected by a poorly executed system shutdown. Make sure that you have gracefully shut down any applications before powering off the system.

## What to Do

1. **Notify users that the system will be powered down.**
2. **Back up the system files and data, if necessary.**
3. **Ensure that the system control switch is in the Normal position.**
4. **Press and release the Power button on the system front panel.**

The system begins a graceful software system shutdown.

---

**Note** – Pressing and releasing the Power button initiates a graceful software system shutdown. Pressing and holding in the Power button for five seconds causes an immediate hardware shutdown. Whenever possible, you should use the graceful shutdown method. Forcing an immediate hardware shutdown may cause disk drive corruption and loss of data. Use that method only as a last resort.

---

5. **Wait for the system Power/OK LED to turn off.**
6. **Turn the system control switch to the Forced Off position.**



---

**Caution** – Be sure to turn the system control switch to the Forced Off position before handling any internal components. Otherwise, it is possible for an operator at a system controller (SC) console to power on the system while you are working inside it. The Forced Off position is the only system control switch position that prevents an SC console from power on the system.

---

7. **Remove the system key from the system control switch and keep it in a secure place.**

## What Next

Continue with your parts removal and installation, as needed.

---

## How to Initiate a Reconfiguration Boot

After installing any new internal option or external storage device, you must perform a reconfiguration boot so that the operating system is able to recognize the newly installed device(s). In addition, if you remove any device and do not install a replacement device prior to rebooting the system, you must perform a reconfiguration boot in order for the operating system to recognize the configuration change. This requirement also applies to any component that is connected to the system's I<sup>2</sup>C bus, including memory modules, CPU/Memory boards, and power supplies.

This requirement *does not* apply to any component that is:

- Installed or removed as part of a hot-plug or hot-swap operation
- Installed or removed before the operating system is installed
- Installed as an identical replacement for a component that is already recognized by the operating system

## Before You Begin



---

**Caution** – Before you power on the system, make sure that the system doors and all panels are properly installed.

---

You need a system ASCII terminal, local graphics terminal, or a `tip` connection to the Sun Fire V490 server in order to issue software commands. See your *Sun Fire V490 Server Administration Guide*.

## What to Do

1. **Turn on power to any peripherals and external storage devices.**  
Read the documentation supplied with the device for specific instructions.
2. **Turn on power to the ASCII terminal or local graphics terminal.**

**3. Insert the system key into the system control switch and turn the switch to the Diagnostics position.**

See “System Control Switch” on page 8 for information about control switch settings.

**4. Press the Power button below the control switch to power on the system.**

**5. Wait for the ok prompt to appear.**

The system may take anywhere from 15 to 30 minutes before the ok prompt appears. This time depends on the system configuration (number of processors, memory modules, PCI cards) being tested.

**6. Turn the system control switch to the Normal position.**

**7. At the ok prompt, type:**

```
ok reset-all
```

Depending on how the auto-boot OpenBoot configuration variable is set, the system may or may not start to reboot its operating system.

**8. If the operating system starts to reboot, do the following.**

**a. Wait until the system has completed initializing memory.**

During initialization, you see the message:

```
Initializing memory
```

**b. Watch carefully, as you will need to act quickly.**

Once the process is complete, the Initializing memory message is erased and the system displays a line similar to:

```
Boot device: disk2 File and args:
```

**c. At this point, abort the boot process as promptly as possible.**

To do this, use one of the following methods:

- Hold down the Stop (or L1) key and press A on your keyboard.
- Press the Break key on the terminal keyboard.
- Type ~# in a tip window.

The system should return to the ok prompt.

---

**Note** – If the system does not return to the `ok` prompt, it means you did not abort quickly enough. If this occurs, wait for the system to reboot, force the system to return to the `ok` prompt, and repeat Step 7.

---

9. At the `ok` prompt, type:

```
ok boot -r
```

The `boot -r` command rebuilds the device tree for the system, incorporating any newly installed options so that the operating system will recognize them.

10. Turn the control switch to the Locked position, remove the key, and keep it in a secure place.

This prevents anyone from accidentally powering off the system.

## What Next

The system's front panel LED indicators provide power-on status information. For more information about the system LEDs, see:

- "Front Panel LEDs" on page 3

---

## How to Slide the System Out of the Cabinet

This procedure describes placing the system in position for service by sliding it out of the cabinet without removing it from the rack. All service procedures except removing and replacing the centerplane and power distribution board can be performed while the system is still attached to the cabinet.

---

**Note** – Sliding the system out of the cabinet is not required for servicing disk drives, power supplies, or Fan Tray 0.

---

## Before You Begin



---

**Caution** – Unless the cabinet is bolted to the floor, you must extend the cabinet’s anti-tip legs and adjust their stabilizing feet to the floor. You must level and secure the cabinet to provide a safe working environment.

---

For a list of useful tools required for this procedure,

- “Tools Required for Installation and Service” on page 18

## What to Do

- 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 (or remove) the front and back cabinet doors.**
- 3. If a cable management arm is not installed, disconnect all external cables attached to the back panel of the system.**



---

**Caution** – Do not disconnect the power cords from the system power inlets unless you are installing or replacing the system control switch, the power distribution board, the centerplane, the PCI riser board, or the system controller (SC) card. The power cords ground the system and provide electrostatic discharge (ESD) protection to internal components.

---

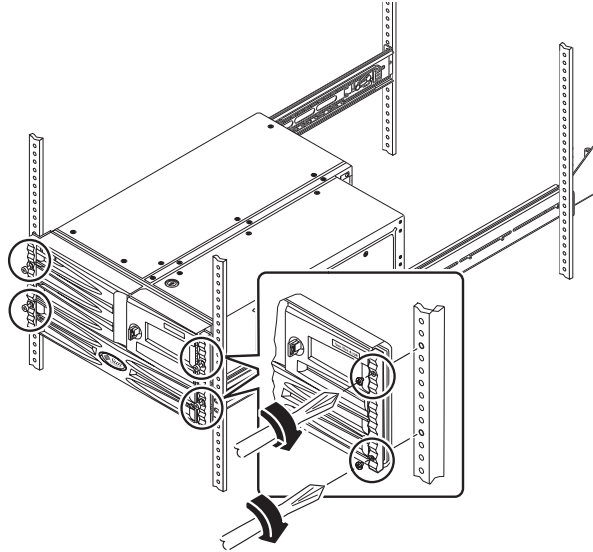
- 4. Remove the four screws that secure the system to the left and right vertical rails at the front of the rack.**

Use a Phillips No. 2 screwdriver to remove the screws, which are in recessed access holes in the decorative panels affixed to the system’s front panel.

---

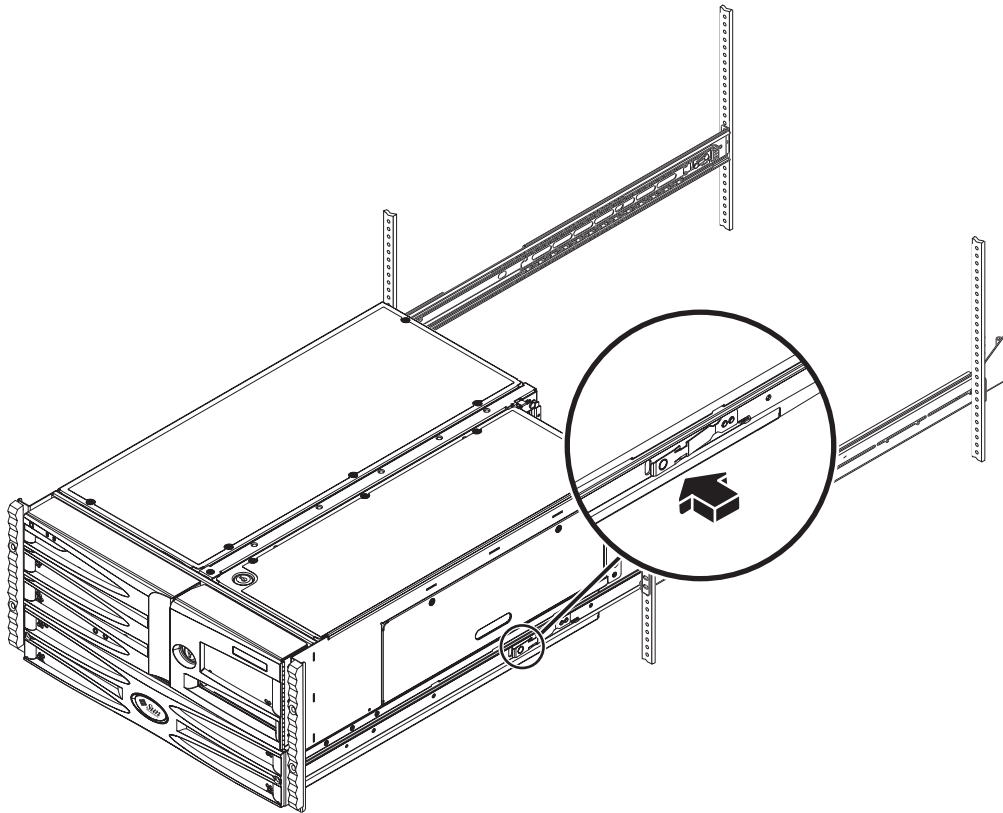
**Note** – The screws also secure the decorative panels to the chassis.

---



5. Slide the system chassis evenly out of the cabinet until the inner glides stop in the slide.

Pull the system smoothly out of the enclosure, holding the system by the power supply handles. Continue pulling the system until the back of the chassis clears the enclosure and you hear the flat spring catches in the glides engage with an audible clicking sound. The system is then fully extended and secure.



---

**Note** – If you need to remove the server completely from the cabinet, see Step 5 through Step 9 in “How to Remove the System From the Cabinet” on page 33.

---

## What Next

To slide the system into the cabinet, see:

- “How to Slide the System Into the Cabinet” on page 31



---

# How to Slide the System Out of a Fully Populated Cabinet

This procedure describes placing the system in position for service by sliding it out of a fully populated cabinet without removing it from the rack. All service procedures except removing and replacing the centerplane and power distribution board can be performed while the system is still attached to the cabinet.

---

**Note** – Sliding the system out of the cabinet is not required for servicing disk drives, power supplies, or Fan Tray 0.

---

## Before You Begin

Complete this task:

- “How to Remove the Power Supply Access Panel” on page 46



---

**Caution** – Unless the cabinet is bolted to the floor, you must extend the cabinet’s anti-tip legs and adjust their stabilizing feet to the floor. You must level and secure the cabinet to provide a safe working environment.

---

For a list of tools required for this procedure, see:

- “Tools Required for Installation and Service” on page 18

## What to Do

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 (or remove) the front and back cabinet doors.**
3. **If a cable management arm is not installed, disconnect all external cables attached to the back panel of the system.**

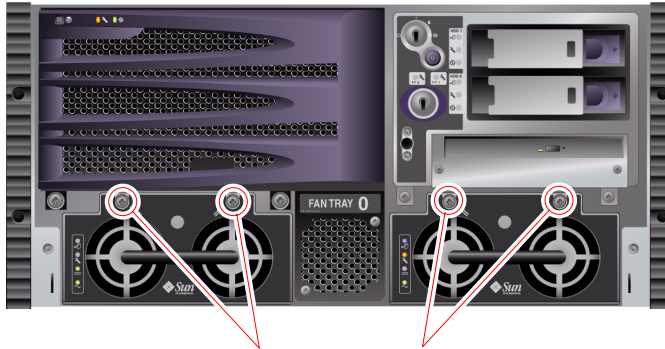


---

**Caution** – Do not disconnect the power cords from the system power inlets unless you are installing or replacing the system control switch, the power distribution board, the centerplane, the PCI riser board, or the system controller (SC) card. The power cords ground the system.

---

4. Make sure that the power supply mounting screws are fully tightened.



Power supply mounting screws

5. Remove the four captive screws that secure the system to the left and right vertical rails at the front of the rack.

Use a Phillips No. 2 screwdriver to remove the screws, which are in recessed access holes in the decorative panels affixed to the system's front panel.

---

**Note** – The screws also secure the decorative panels to the chassis.

---

6. Slide the system chassis evenly out of the cabinet until the inner glides stop in the slide.

Pull the system smoothly out of the enclosure, holding the system by the power supply handles. Continue pulling the system until the back of the chassis clears the enclosure and you hear the flat spring catches in the glides engage with an audible clicking sound. The system is then fully extended and secure.

---

**Note** – If you need to remove the server completely from the cabinet, see Step 5 through Step 9 in "How to Remove the System From the Cabinet" on page 33.

---

## What Next

Before sliding the system back into the cabinet, you must install the power supply access panel. See:

- “How to Install the Power Supply Access Panel” on page 48

To slide the system into the cabinet, see:

- “How to Slide the System Into the Cabinet” on page 31

---

# How to Slide the System Into the Cabinet

## Before You Begin

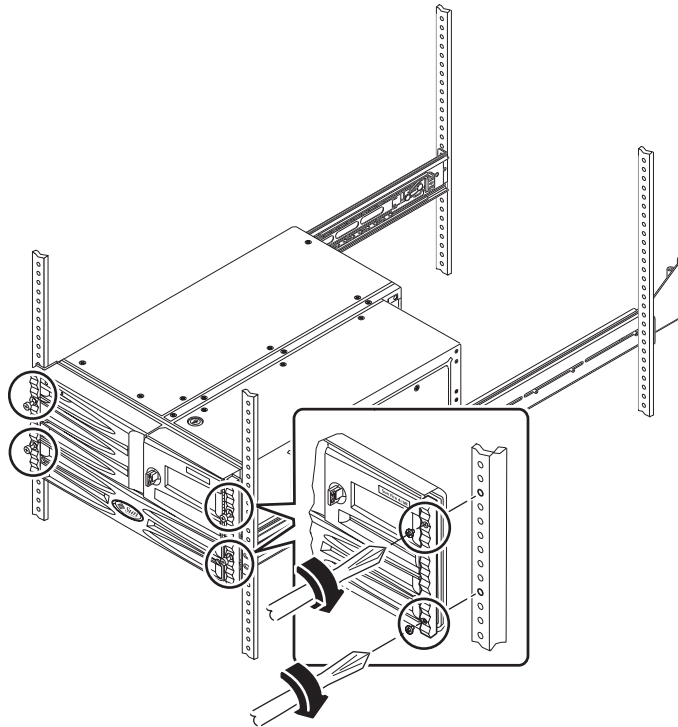
If you have been working inside the system, replace all access panels. See the following sections for more information:

- “How to Install the Power Supply Access Panel” on page 48
- “How to Install the CPU Access Panel” on page 74
- “How to Install the PCI Access Panel” on page 96

## What to Do

1. Slide the system chassis evenly into the cabinet until the system comes to a complete stop.
2. Tighten the four captive screws securing the system to the left and right vertical rails at the front of the rack.

Use a Phillips No. 2 screwdriver to tighten the four captive screws, which are in recessed access holes in the decorative panels affixed to the system's front panel.



3. Connect all external cables that were attached to the back panel of the system.

Examine each disconnected cable for information indicating the cable's origin and its terminating connection.

4. Replace, close, and lock the cabinet doors, as appropriate.

## What Next

To power on the system, see:

- “How to Power On the System” on page 18

---

## How to Remove the System From the Cabinet

Sun recommends that you remove the system from the cabinet when doing the following:

- Removing and installing the centerplane
- Removing and installing the power distribution board
- Removing and installing the system control switch/power button cable

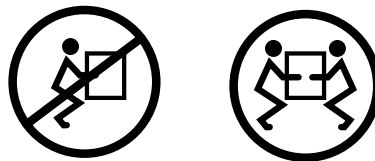
You can perform all other procedures while the system is still attached to the rails extended from the rack. If you want to remove the system from the cabinet for any other reason, follow the instructions in this section.



---

**Caution** – The chassis is heavy. Two persons are required to remove the system from the cabinet in the following procedure.

---



## Before You Begin

Complete these tasks:

- Identify a helper to assist you in removing the system.
- Review the steps in the next section with your helper beforehand and discuss how to coordinate your efforts to ensure your mutual safety.
- Assemble the correct tools for the procedure. See “Tools Required for Installation and Service” on page 18.

- Power off the system. See “How to Power Off the System” on page 22.
- Remove the power supply access panel. See “How to Remove the Power Supply Access Panel” on page 46



---

**Caution** – When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

---



---

**Caution** – Unless the cabinet is bolted to the floor, you must extend the cabinet’s anti-tip legs and adjust their stabilizing feet to the floor. You must level and secure the cabinet to provide a safe working environment.

---

---

**Note** – Make sure that the ball-bearing runner on each slide assembly is all the way forward.

---

## What to Do

**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 (or remove) the front and back cabinet doors.**

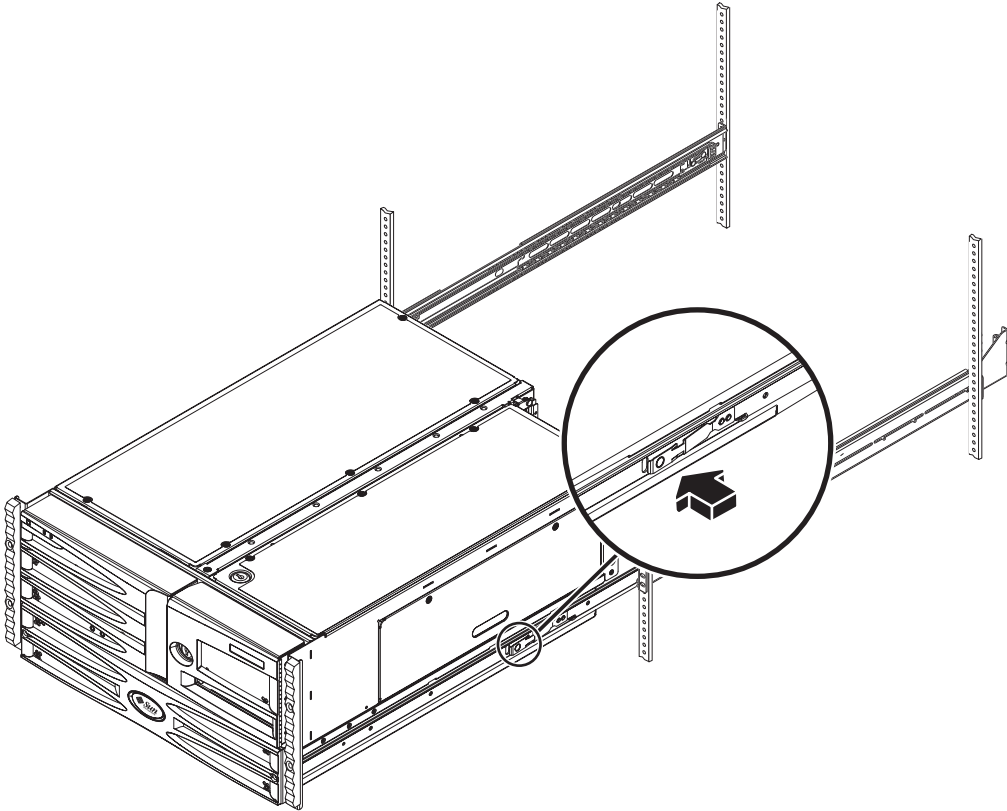
**3. Disconnect all external cables attached to the back panel of the system.**

**4. Extend the server from the cabinet, and then position one person on each side of the system, facing the system glides.**

When you are both in position, verify that your helper understands what to do with the system after you release the server and remove it. Also agree on a route to follow, and visually inspect it for potential safety hazards (for example, cables on the floor, other people working in the vicinity, and so on).

**5. Locate the flat spring catch shown in the following figure.**

Each person should visually locate one of the two flat spring catches that release the system from the rack glide. One catch is attached to each inner glide, as shown in the following figure.



**6. Prepare to remove the system.**

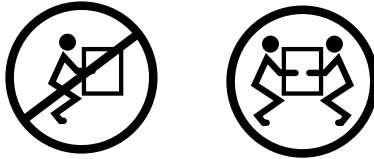
Each person should place one hand on the flat spring catch and their other hand beneath the chassis, palm up, ready to support the weight of the chassis.



---

**Caution** – The chassis is heavy. Two persons are required to remove the system from the cabinet in the following steps.

---



7. Simultaneously press in on both flat spring catches to release them, and then slide the system out of the glides.

Each person presses one spring catch and helps slide the system free of the outer glide, supporting the weight of the system with both hands as the system slides free of the rack.

8. Set the system on a workbench or other stable surface.
9. Replace, close, and lock the cabinet doors, as appropriate.

## What Next

To place the system into the rack glides, see:

- “How to Install the System Into the Cabinet” on page 36

---

# How to Install the System Into the Cabinet

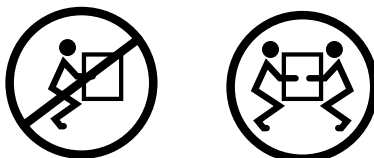
This procedure assumes that the slide assemblies are already installed in the rack. For further information about installing the slide assemblies, see the *Sun Fire V490 Server Setup and Rackmounting Guide*.



---

**Caution** – The chassis is heavy. Two persons are required to place the system into the rack slide assembly in the following procedure.

---





# Before You Begin

Complete these tasks:

- Identify a helper to assist you in installing the system.
- Review the steps in the next section with your helper beforehand and discuss how to coordinate your efforts to ensure your mutual safety.
- Assemble the correct tools for the procedure. See “Tools Required for Installation and Service” on page 18.



---

**Caution** – When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

---



---

**Caution** – Unless the cabinet is bolted to the floor, you must extend the cabinet’s anti-tip legs and adjust their stabilizing feet to the floor. You must level and secure the cabinet to provide a safe working environment.

---

## What to Do

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 (or remove) the cabinet doors.**
3. **Slide the empty rack slides back into their protective outer glides.**

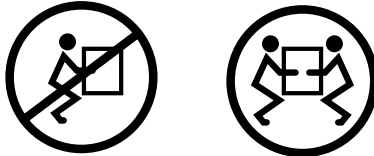
4. **Position one person on each side of the system, facing the inner glides on the system chassis.**



---

**Caution** – The chassis is heavy. Two persons are required to place the system into the rack slide assembly.

---

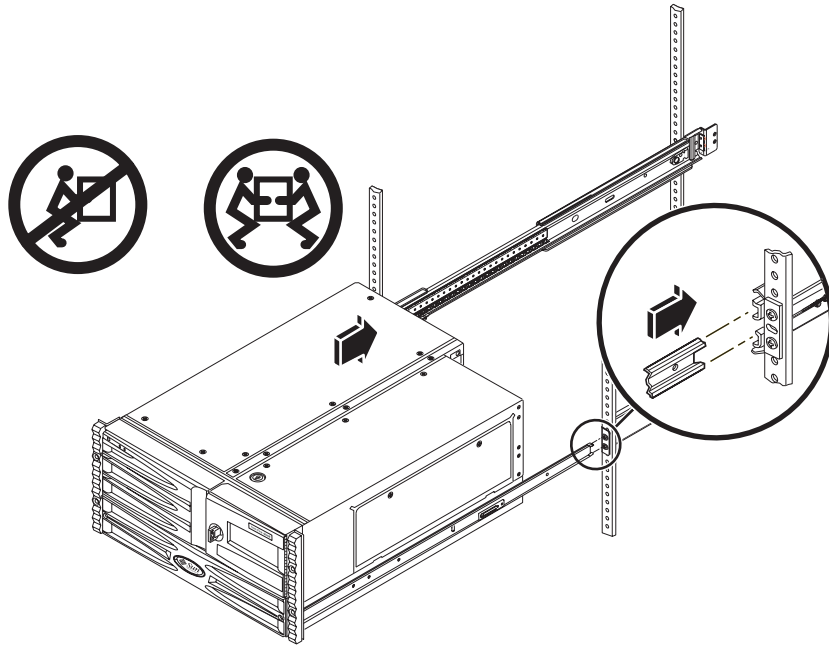


When you are both in position, verify that your helper understands what to do with the system after you lift it. Also agree on a route to follow to the cabinet, and visually inspect the route for potential safety hazards (for example, cables on the floor, other people working in the vicinity, and so on).

5. **Lift the system and carry it to the front of the cabinet.**

Each person should place both hands beneath the chassis and support half the weight of the system.

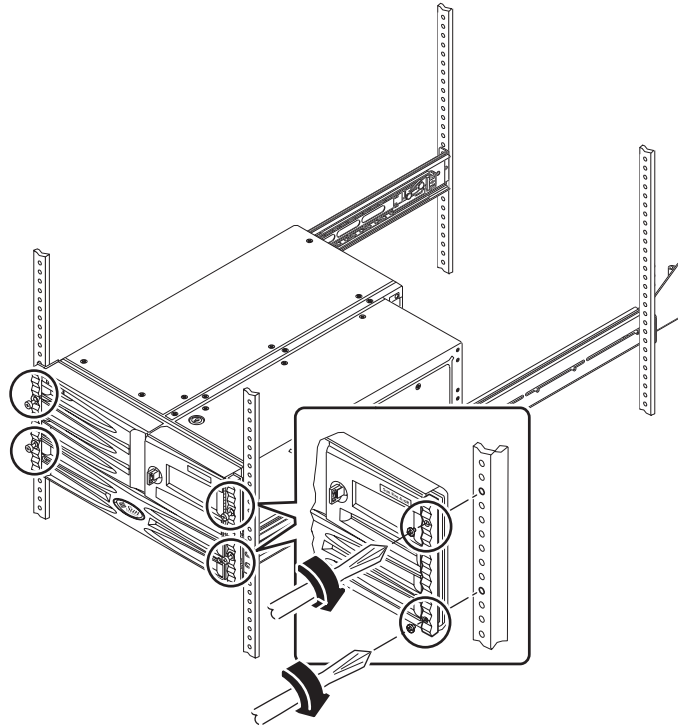
6. Insert the system glides into the inner slides of the rack glides.



7. Slide the system smoothly into the rack glides until it is stopped inside the cabinet.

**8. Secure the system to the left and right vertical rails at the front of the rack.**

Use a Phillips No. 2 screwdriver to replace the four screws that secure the system in the cabinet. These screws are in recessed access holes in the decorative panels affixed to the system's front panel.



**9. Connect all external cables that were attached to the back panel of the system.**

Examine each disconnected cable for information indicating the cable's origin and its terminating connection.

**10. Replace, close, and lock the cabinet doors, as appropriate.**

## What Next

Complete this task:

- "How to Install the Power Supply Access Panel" on page 48

To power on the system, see:

- "How to Power On the System" on page 18

---

# How to Avoid Electrostatic Discharge

Use the following procedure to prevent static damage whenever you are accessing any of the internal components of the system.

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25

If you are servicing any internal components, remove the relevant access panel. Complete the appropriate task(s):

- “How to Remove the Power Supply Access Panel” on page 46
- “How to Remove the CPU Access Panel” on page 72
- “How to Remove the PCI Access Panel” on page 94

You must have the following items:

- Antistatic wrist or foot strap
- Antistatic mat

## What to Do



---

**Caution** – Printed circuit boards and hard disk drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or the work environment can destroy components. Do not touch the components or any metal parts without taking proper antistatic precautions.

---

1. **Disconnect the AC power cords from the power inlets only when performing the following procedures:**
  - Removing and installing the power distribution board
  - Removing and installing the centerplane
  - Removing and installing the PCI riser board
  - Removing and installing the system controller (SC) card
  - Removing and installing the system control switch/power button cable

The AC power cord provides a discharge path for static electricity, so it should remain plugged in except when you are servicing the parts noted above.

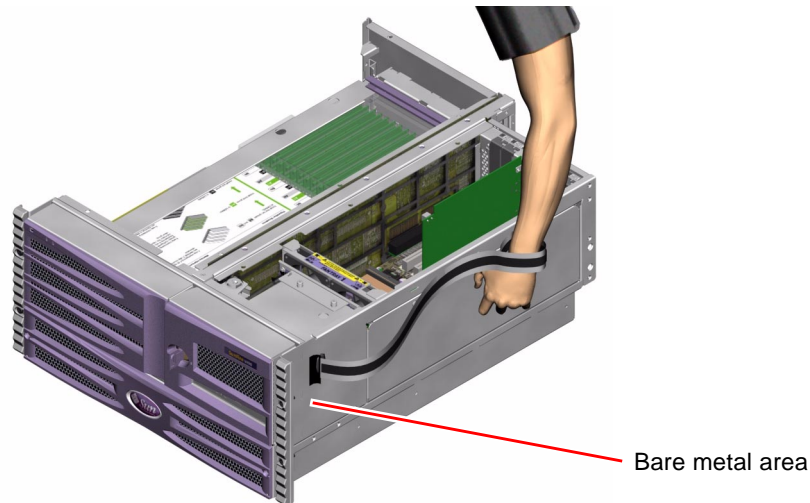
## 2. Use an antistatic mat or similar surface.

When performing any installation or service procedure, place static-sensitive parts, such as boards, cards, and disk drives, on an antistatic surface. The following items can be used as an antistatic surface:

- The bag used to wrap a Sun replacement part
- The shipping container used to package a Sun replacement part
- Sun electrostatic discharge (ESD) mat, Sun part number 250-1088 (available through your Sun sales representatives)
- Disposable ESD mat, shipped with replacement parts or options

## 3. Use an antistatic wrist strap.

Attach the appropriate end to the system chassis sheet metal and attach the other end of the strap to your wrist. Refer to the instructions that come with the strap.



---

**Note** – Make sure that the wrist strap is in direct contact with the metal on the chassis.

---



---

**Caution** – If you are servicing a component that requires you to disconnect the power cords—such as the SC card, PCI riser board, centerplane, system control switch, or power distribution board—connect the antistatic wrist strap to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

4. **Detach both ends of the strap after you have completed the installation or service procedure.**

## What Next

To reassemble and power on the system, complete the appropriate task(s):

- “How to Install the Power Supply Access Panel” on page 48
- “How to Install the CPU Access Panel” on page 74
- “How to Install the PCI Access Panel” on page 96
- “How to Power On the System” on page 18





## Servicing the Front Panel Components

---

This chapter contains the following sections:

- “About Hot-Swappable and Hot-Pluggable Components” on page 46
- “How to Remove the Power Supply Access Panel” on page 46
- “How to Install the Power Supply Access Panel” on page 48
- “How to Remove a Power Supply” on page 49
- “How to Install a Power Supply” on page 52
- “How to Remove a Disk Drive” on page 55
- “How to Install a Disk Drive” on page 57
- “How to Remove a Disk Drive Using the Hot-Plug Operation” on page 59
- “How to Install a Disk Drive Using the Hot-Plug Operation” on page 63
- “How to Remove Fan Tray 0” on page 65
- “How to Install Fan Tray 0” on page 68

---

**Note** – To service the system control switch/power button cable assembly, see Chapter 7.

---

---

# About Hot-Swappable and Hot-Pluggable Components

The power supplies are hot-swappable. You can remove and replace a power supply while the system is running, as long as the other power supply is working properly. For more information, see the following:

- “How to Remove a Power Supply” on page 49
- “How to Install a Power Supply” on page 52

The disk drives are hot-pluggable. You must issue special commands before removal. For more information, see the following:

- “How to Remove a Disk Drive Using the Hot-Plug Operation” on page 59
- “How to Install a Disk Drive Using the Hot-Plug Operation” on page 63



---

**Caution** – Fan trays are not hot-swappable, and must be kept installed while the system is running to ensure proper cooling. Do not attempt to remove either fan tray while the system is running.

---

---

## How to Remove the Power Supply Access Panel

### Before You Begin

Complete this task:

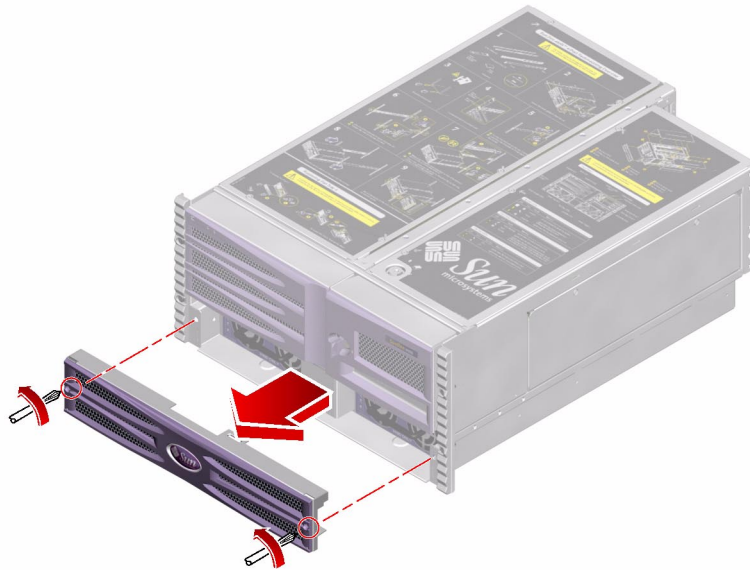
- “How to Avoid Electrostatic Discharge” on page 41

### What to Do

#### 1. Use the system key to unlock the media door.

The security lock secures the media door, power supply access panel, and Fan Tray 0.

2. Using a Phillips No. 2 screwdriver, loosen the two captive screws securing the power supply access panel to the chassis.



3. Pull out the power supply access panel and set it aside.

## What Next

Complete this task:

- “How to Install the Power Supply Access Panel” on page 48

---

# How to Install the Power Supply Access Panel

## Before You Begin

Complete this task:

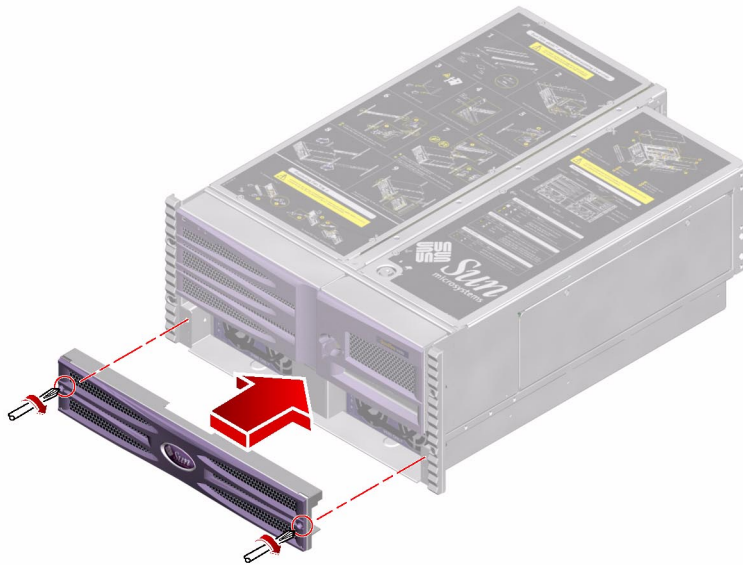
- “How to Remove the Power Supply Access Panel” on page 46

## What to Do

1. **Use the system key to unlock the media door.**

The security lock secures the media door, power supply access panel, and Fan Tray 0.

2. **Insert the power supply access panel into the bay.**



3. Using a Phillips No. 2 screwdriver, tighten the two captive screws that secure the power supply access panel to the chassis.
4. Lock the media door.

## What Next

If the system is powered off, complete this task:

- “How to Power On the System” on page 18

---

# How to Remove a Power Supply

## Before You Begin

Power supplies are hot-swappable. It is not necessary to power off the system if you are removing a faulty power supply. For more information, see “About the Power Supplies” in your *Sun Fire V490 Server Administration Guide*.

When both power supplies are functioning normally, both power supplies’ OK-to-Remove LEDs are lit. If a power supply fails, the system Fault LED and the failed power supply’s Fault LED will light. The other power supply’s OK-to-Remove LED will *be unlit*, assuming the other power supply is still functioning normally. For more information, see “Power Supply LEDs” on page 7.

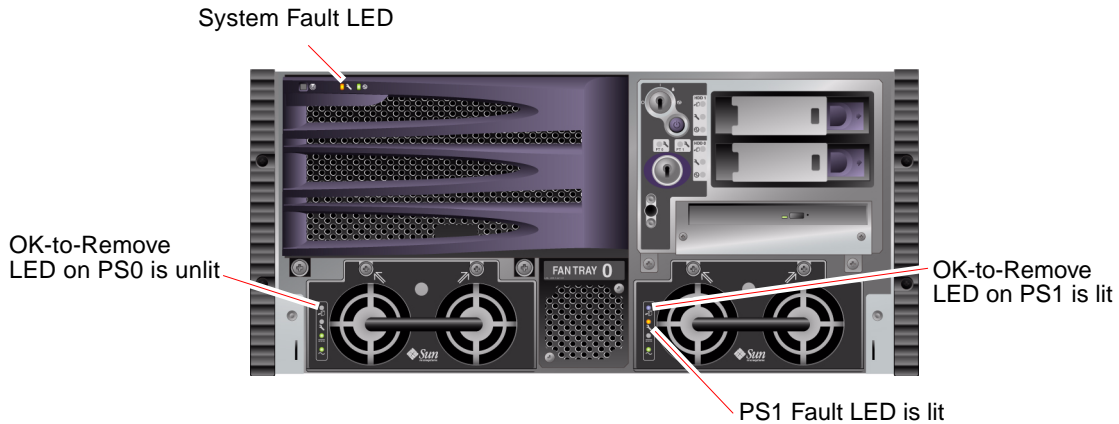


---

**Caution** – Do not remove a power supply from a running system unless the power supply OK-to-Remove LED is lit.

---

The following figure shows a system with a faulty Power Supply 1.



Complete these tasks:

- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the Power Supply Access Panel” on page 46

---

**Note** – Use only Sun Fire V490 200-240 VAC power supplies in the Sun Fire V490 system.

---

## What to Do

---

**Note** – If a power supply fails, its Fault LED will light, as well as the system Fault LED. For more information about front panel LEDs, see “Front Panel LEDs” on page 3.

---

---

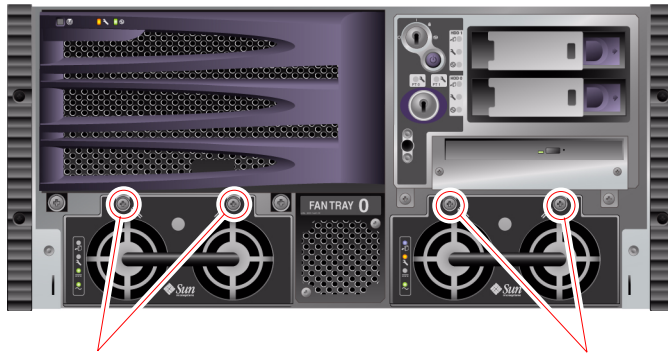
**Note** – If a power supply fails and you do not have a replacement available, leave the failed power supply installed to ensure proper system cooling.

---

### 1. Identify the power supply that you want to remove.

Check the power supply status LEDs to determine which power supply is faulty. Before continuing, make sure that the blue OK-to-Remove LED is lit on the power supply you want to remove. For more information, see “Power Supply LEDs” on page 7.

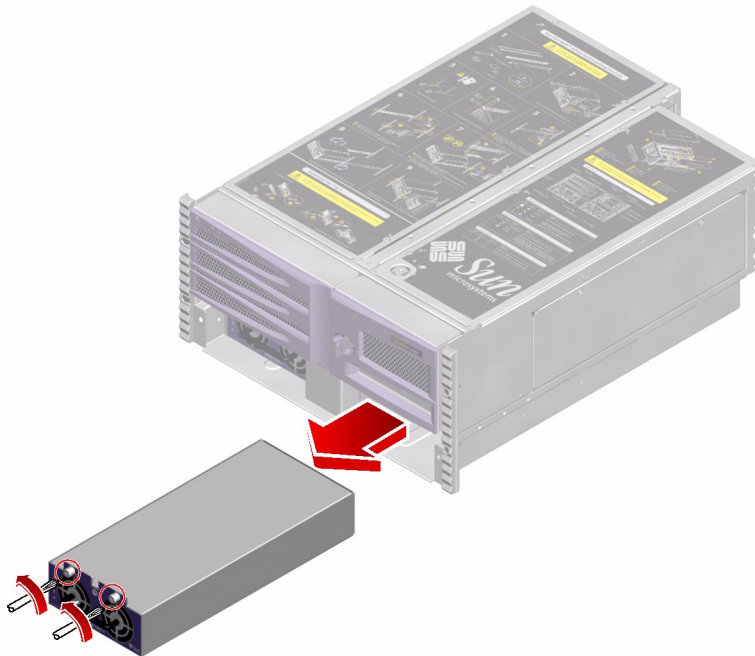
2. Loosen the two Phillips No. 2 captive screws securing the power supply to the chassis.



Power Supply 0 mounting screws

Power Supply 1 mounting screws

3. Pull out the power supply in a smooth motion until it is free of the bay.  
Support the power supply from underneath as you pull the unit out of the bay.





---

**Caution** – When removing a hot-swappable power supply, do not disengage and reengage the power supply in rapid succession. Doing so could damage the system.

---



---

**Caution** – Never insert your hand into the power supply bay while the system is connected to AC power. Doing so could result in serious personal injury.

---

## What Next

Complete these tasks:

- “How to Install a Power Supply” on page 52
- “How to Install the Power Supply Access Panel” on page 48

---

# How to Install a Power Supply

## Before You Begin

If you are installing a redundant power supply, it is not necessary to power off the system. For more information, see “About the Power Supplies” in your *Sun Fire V490 Server Administration Guide*.

If you are replacing both power supplies, complete this task:

- “How to Power Off the System” on page 22

Complete these tasks:

- “How to Remove the Power Supply Access Panel” on page 46
- “How to Remove a Power Supply” on page 49

---

**Note** – Use only Sun Fire V490 200-240 VAC power supplies in the Sun Fire V490 system.

---



# What to Do

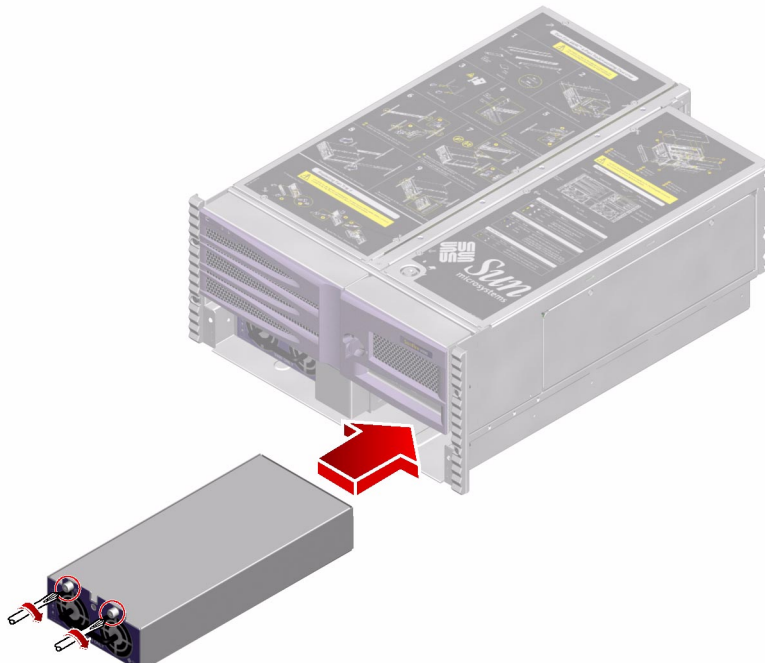
1. Align the new power supply with its bay.

---

**Note** – If you are hot-swapping a power supply, wait until the system displays a console message confirming removal of the old power supply. See your *Sun Fire V490 Server Administration Guide* for more information.

---

2. Slide the new power supply into the power supply bay until the power supply connectors start to engage the connectors on the power distribution board.



3. Push firmly on the front of the power supply to engage the connectors with the power distribution board.

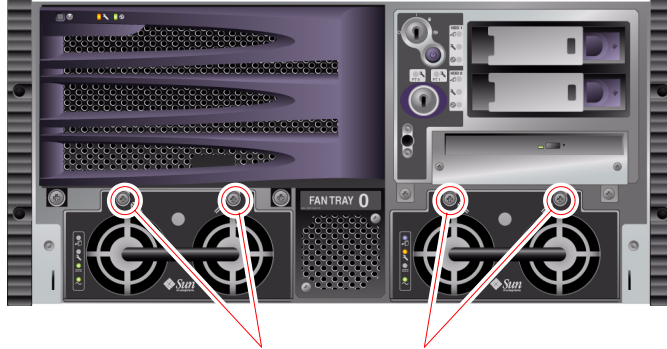


---

**Caution** – If you are hot-swapping a redundant power supply, take care to avoid jarring the system, as some movements could adversely affect the system while it is running.

---

4. Tighten the two captive Phillips No. 2 screws that secure the power supply to the chassis.



Power supply mounting screws

## What Next

Verify correct operation of the power supply by checking the Fault, DC Present, and AC Present LEDs on the power supply. You should hear the power supply fan start spinning and the two green LEDs should light within three seconds of completing a hot-swap installation or after restoring power to the system. For more information about the power supply LEDs, see “Power Supply LEDs” on page 7.

After confirming that the new power supply is operational, complete this task:

- “How to Install the Power Supply Access Panel” on page 48

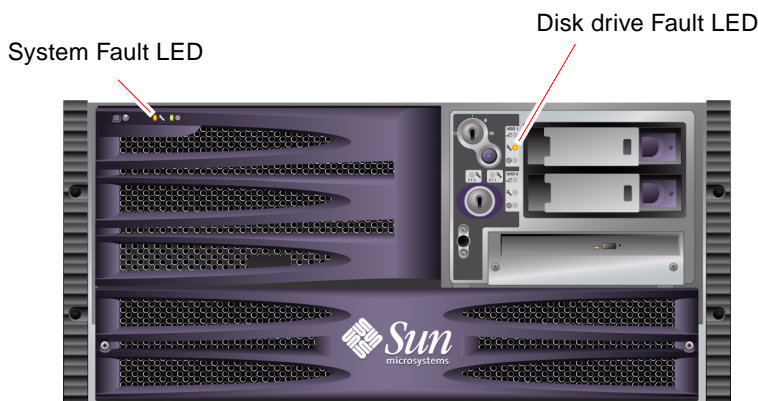
---

# How to Remove a Disk Drive

This procedure describes the physical disk drive removal. The procedure is different if you are removing a drive using a hot-plug operation. If you want to perform a hot-plug removal, see “How to Remove a Disk Drive Using the Hot-Plug Operation” on page 59.

## Before You Begin

If a disk drive fails, the system Fault LED and the disk drive Fault LED will light.



For additional information about the disk drives, see your *Sun Fire V490 Server Administration Guide*.

You must follow antistatic precautions when handling a disk drive. Complete this task:

- “How to Avoid Electrostatic Discharge” on page 41

If you are not performing a hot-plug operation, complete this task:

- “How to Power Off the System” on page 22

# What to Do

**1. Unlock and open the media door.**

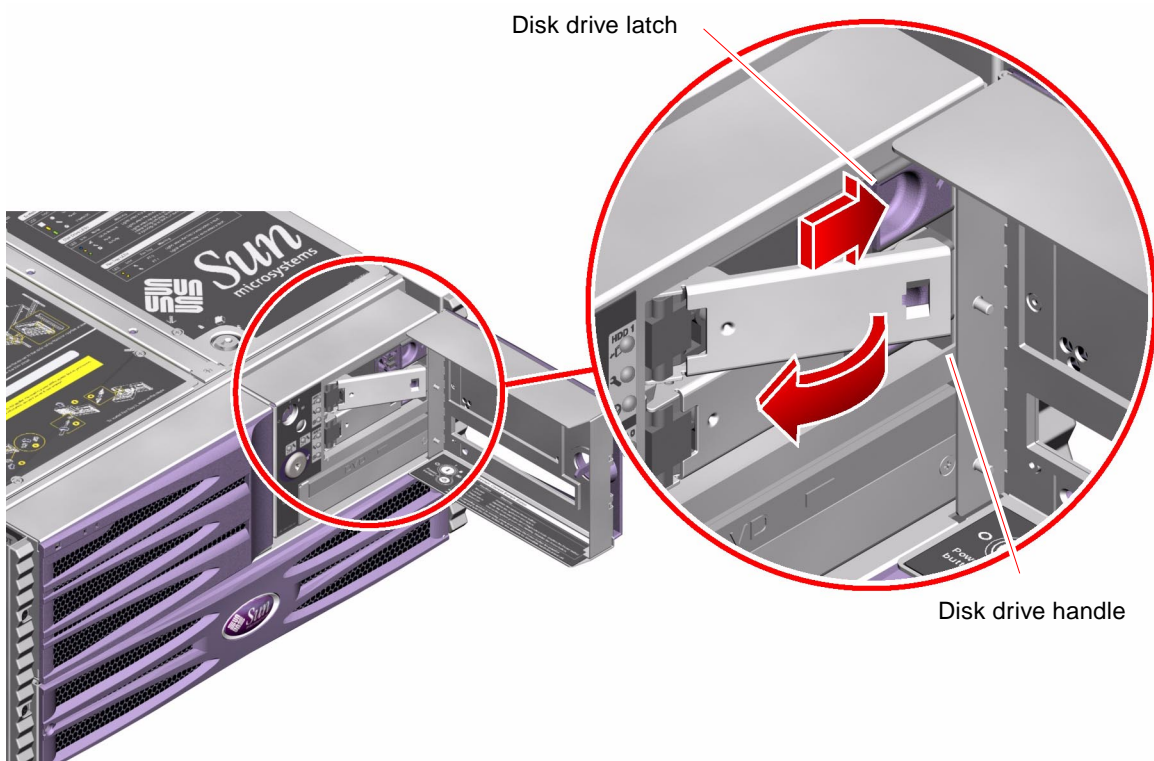
The security lock secures the media door, power supply access panel, and Fan Tray 0.

**2. Identify the disk drive to be removed and note the bay in which it is installed.**

The lower bay is the default system disk location.

**3. Pinch the disk drive latch sideways to release the disk drive handle.**

**4. Pull the handle away from the disk drive until you feel the disk drive connector disengage from the backplane connector.**



5. **Holding the disk drive by the handle, slide the disk drive out of the disk drive bay.**

---

**Note** – When you reinstall the disk drive (or a replacement drive), be sure to install it into the same drive bay as the one from which it was just removed.

---

6. **Place the disk drive on an antistatic mat.**

## What Next

To install a disk drive, complete this task:

- “How to Install a Disk Drive” on page 57

---

# How to Install a Disk Drive

This procedure describes the physical installation of a disk drive. The procedure is different if you are installing a drive using a hot-plug operation. If you want to perform a disk drive hot-plug installation, see “How to Install a Disk Drive Using the Hot-Plug Operation” on page 63.

## Before You Begin

For additional information about internal disk drives and configuring disk drive arrays, see your *Sun Fire V490 Server Administration Guide*.

You must follow antistatic precautions when handling a disk drive. Complete this task:

- “How to Avoid Electrostatic Discharge” on page 41

If you are not performing a hot-plug operation, complete this task:

- “How to Power Off the System” on page 22

# What to Do

## 1. Unlock and open the media door.

The security lock secures the media door, power supply access panel, and Fan Tray 0.

## 2. Release the disk drive handle on the disk drive.

Pinch the disk drive latch sideways to open it.

## 3. Align the disk drive to its drive bay.

Orient the disk drive so that the disk drive latch is on the right.

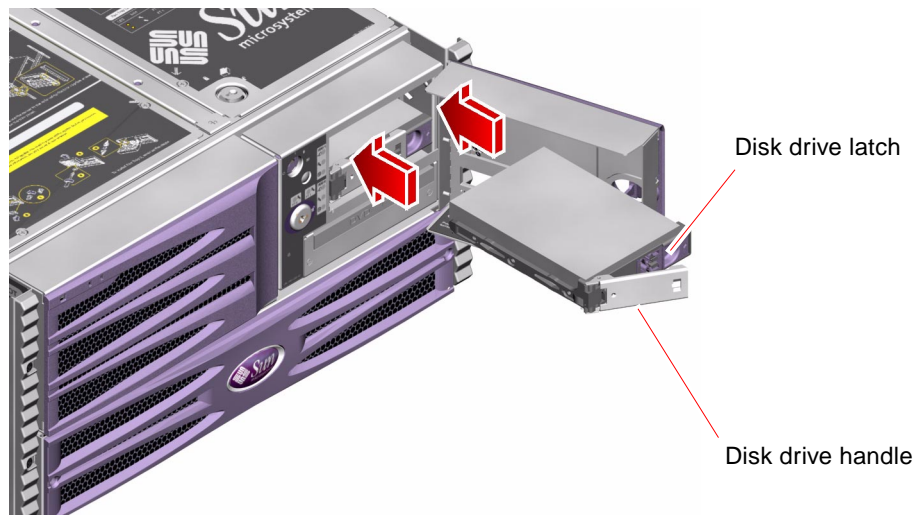
---

**Note** – If you are replacing a drive that you removed previously, be sure to install the disk drive into the same drive bay from which it was removed.

---

## 4. Insert the disk drive into the disk drive bay guide rails.

Slide the disk drive into the bay until it barely contacts the backplane.



## 5. Firmly press the center of the disk drive handle toward the disk drive until the latch closes, securing the disk drive in place.

# What Next

Complete this task:

- “How to Power On the System” on page 18

You do not have to perform a reconfiguration boot with FC-AL drives. For additional information, see your *Sun Fire V490 Server Administration Guide*.

---

## How to Remove a Disk Drive Using the Hot-Plug Operation

The system’s disk hot-plug feature enables you to remove a disk drive without shutting down the operating system or turning off the system power. The way in which you remove a disk drive depends on the application you are using and whether you are replacing a drive, adding a new one, or removing a drive permanently.

When you remove a drive using the hot-plug operation, you need to stop the disk drive and take it offline to remove the logical software links to the disk drive, and to reconfigure the file systems so that they now ignore the removed drive. You may also have to reconfigure your application software to operate without the removed drive.

Use the `luxadm` software tool to remove a Sun Fire V490 server’s internal disk drive using the hot-plug operation. The following procedure describes the general steps involved, but your specific device names may be different.



---

**Caution** – Do not hot-plug drives without the correct preparations. The system supports hot-plugging disk drives, but there are software procedures that you must perform before you remove or install any drive.

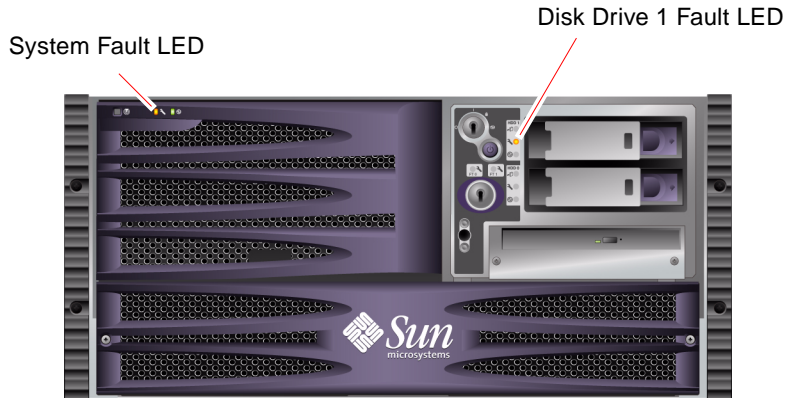
---

For more information, refer to *Platform Notes: Using luxadm Software*, which is provided on the Solaris Software Supplement CD for the Solaris release you are running.

Refer also to the `luxadm(1M)` man page.

# Before You Begin

If a disk drive fails, the system Fault LED and the disk drive Fault LED will light. In the following figure, the Disk Drive 1 Fault LED is lit.



If you have not configured the system with two boot disks, you cannot hot-plug a single boot disk. You can only hot-plug the boot disk if you have configured a two-disk mirror of the boot disk for hot-plugging. If the system is configured with a boot disk and a data disk, you can hot-plug the data disk, but *not* the boot disk.

Complete these tasks:

- Obtain the logical device name(s) for the device(s) you plan to remove. See your *Sun Fire V490 Server Administration Guide* for more information.
- Select the disk and stop any activity or applications accessing the disk drive.
- Unmount any file systems mounted on the disk drive.

You must follow antistatic precautions when handling a disk drive. Complete this task:

- “How to Avoid Electrostatic Discharge” on page 41

## What to Do

### 1. Become superuser or the root user:

```
% su
Password:
#
```



**2. Type the following luxadm command:**

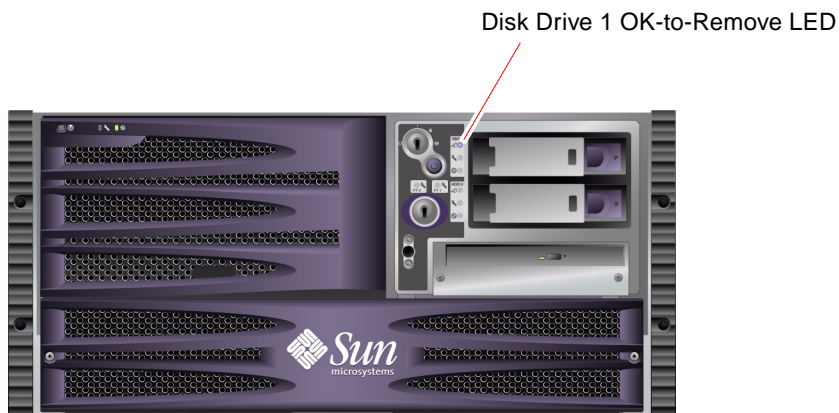
Where *clt1d0s2* is the logical device name for the disk drive. The system dialog follows the command.

```
# luxadm remove_device /dev/rdisk/clt1d0s2
WARNING!!! Please ensure that no file systems are mounted on
these device(s).
All data on these devices should have been backed up.
The list of devices which will be removed is:
1: Device name: /dev/rdisk/clt1d0s2
Node WWN: 20000020371b1f31
Device Type: Disk device
Device Paths:
/dev/ rdisk/ clt1d0s2
```

**3. Type c at the prompt to verify the list of devices:**

```
Please verify the above list of devices and
then enter c or <CR> to Continue or q to Quit. [Default: c]:c
stopping: /dev/rdisk/clt1d0s2.... Done
offlining: /dev/rdisk/clt1d0s2.... Done
```

The disk drive is now offline and spun down. The OK-to-Remove LED will light when the disk drive is ready for you to remove it. In the following figure, the Disk Drive 1 OK-to-Remove LED is lit.



---

**Note** – It may take up to one minute for the drive to come offline and spin down.

---

#### 4. Physically remove the disk drive and press the Return key.

Follow the instructions in Step 1 through Step 6 of “How to Remove a Disk Drive” on page 55. The system responds with the following message:

```
Hit <Return> after removing the device(s).
date system-name picld[87]: Device DISK1 removed
Logical Nodes being removed under /dev/dsk/ and /dev/rdisk:
    c1t1d0s0
    c1t1d0s1
    c1t1d0s2
    c1t1d0s3
    c1t1d0s4
    c1t1d0s5
    c1t1d0s6
    c1t1d0s7
#
```

The `picld` daemon notifies the system that the disk drive has been removed.

---

**Note** – Screen confirmation may take up to one minute.

---

For more information, refer to *Platform Notes: Using luxadm Software*, which is provided on the Solaris Software Supplement CD for the Solaris release you are running.

Refer also to the `luxadm(1M)` man page.

## What Next

If you need to install a drive using the hot-plug operation, complete this task:

- “How to Install a Disk Drive Using the Hot-Plug Operation” on page 63

---

# How to Install a Disk Drive Using the Hot-Plug Operation

The system's disk hot-plug feature enables you to insert a disk drive without shutting down the operating system or turning off the system power. When installing a disk, you must insert the disk drive and wait for it to spin up to operating speed. Then you create logical software links to the disk drive, and re-create or reconfigure the file systems so that the Solaris Operating System recognizes the disk drive. Finally you configure your application (if necessary) to operate with this new drive.

Use the `luxadm` software tool to install a Sun Fire V490 server's internal disk drives using the hot-plug operation. The following procedure describes the general steps involved, but your specific device names may be different.

For more information, refer to *Platform Notes: Using luxadm Software*, which is provided on the Solaris Software Supplement CD for the Solaris release you are running.

Refer also to the `luxadm(1M)` man page.



---

**Caution** – Do not hot-plug drives without the correct preparations. The system supports hot-plugging disk drives, but there are software procedures that you must perform before you remove or install any drive.

---

## Before You Begin

If you have not configured the system with two boot disks, you cannot hot-plug a single boot disk. You can only hot-plug the boot disk if you have configured a two-disk mirror of the boot disk for hot-plugging. If the system is configured with a boot disk and a data disk, you can hot-plug the data disk, but *not* the boot disk.

You must follow antistatic precautions when handling a disk drive. Complete this task:

- “How to Avoid Electrostatic Discharge” on page 41

# What to Do

## 1. Become superuser or the root user.

```
% su
Password:
#
```

## 2. Insert the disk drive into its disk drive bay.

Follow Step 1 through Step 5 of “How to Install a Disk Drive” on page 57. The system responds with the following message:

```
# date system-name picld[87]: Device DISK1 inserted
```

## 3. If you are formatting a new disk drive, or reformatting an existing disk drive, complete the following tasks:



---

**Caution** – Formatting a disk drive destroys any data that is already on the disk drive.

---

### a. Enter the following command:

```
# format
Searching for disks... done
```

The system responds with the disks available for formatting.

### b. Type the number of the disk drive you are formatting:

```
AVAILABLE DISK SELECTIONS:

0. c1t0d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>
   /pci@ 8,600000/ SUNW, qlc@ 4/ fp@ 0,0/ ssd@w210000203760c2fe, 0

1. c1t1d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
   /pci@ 8,600000/ SUNW, qlc@ 4/ fp@ 0,0/ ssd@ w21000020371b1f31,0

Specify disk (enter its number): 1
selecting c1t1d0
[disk formatted]
```

#### 4. Repeat Step 2 through Step 3 to hot-plug the other disk drive.

For more information, refer to *Platform Notes: Using luxadm Software*, which is provided on the Solaris Software Supplement CD for the Solaris release you are running.

Refer also to the `luxadm(1M)`, `devfsadm(1M)`, and `format(1M)` man pages.

#### 5. Close and lock the media door.

## What Next

Mount any file systems associated with the disk drive. Restart any applications accessing the disk drive.

If you need to remove a disk drive using the hot-plug operation, see:

- “How to Remove a Disk Drive Using the Hot-Plug Operation” on page 59

---

## How to Remove Fan Tray 0



---

**Caution** – Do not attempt to operate the system without Fan Tray 0 installed. Doing so could seriously damage the system.

---



---

**Caution** – Fan Tray 0 does not include fan guards. Serious injury can result if you attempt to remove it while the system is running.

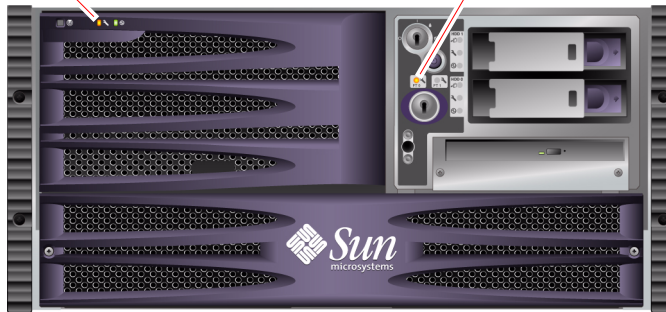
---

## Before You Begin

If Fan Tray 0 fails, the system Fault LED and FT 0 Fault LED will light.

System Fault LED

FT 0 Fault LED



Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Avoid Electrostatic Discharge" on page 41
- "How to Remove the Power Supply Access Panel" on page 46

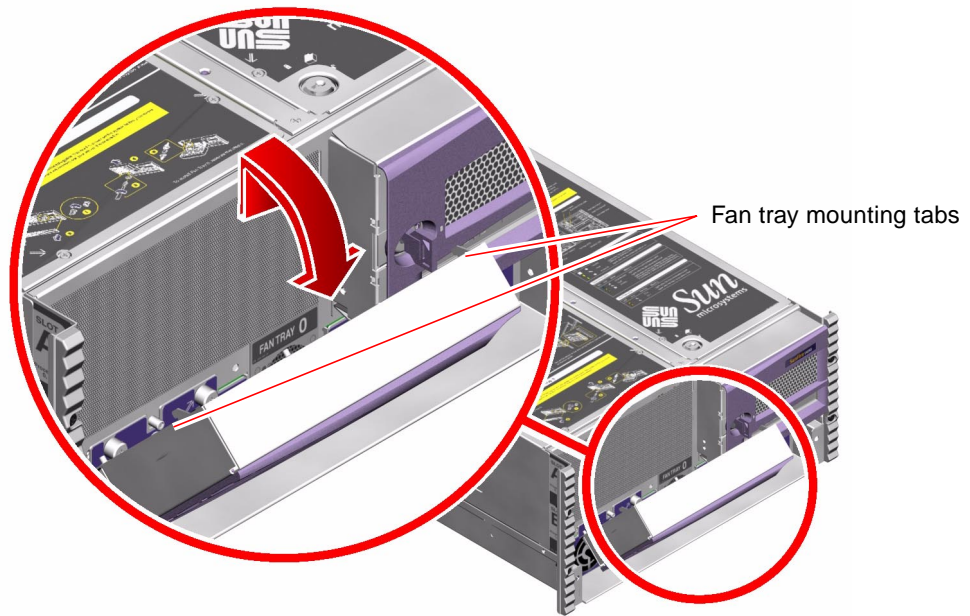
## What to Do

1. Loosen the two Phillips No. 2 captive screws securing Fan Tray 0 to the front of the chassis.



Fan Tray 0 mounting screws

2. Push up on the fan tray and tip it forward. Cradle the fan tray in your hand.  
Two mounting tabs secure Fan Tray 0 to the chassis.



---

**Caution** – Do not drop the fan tray. The fan tray cable is still connected to the chassis, and can be damaged if the fan tray is pulled too far away from the chassis.

---

3. With your other hand, disconnect the fan tray cable end and set the fan tray aside.  
Press the tab to release the cable end, and pull the cable end out of its connector.

## What Next

Complete this task:

- “How to Install Fan Tray 0” on page 68

---

# How to Install Fan Tray 0



---

**Caution** – Do not attempt to operate the system without Fan Tray 0 installed. Doing so could seriously damage the system.

---

## Before You Begin

Complete this task:

- “How to Remove Fan Tray 0” on page 65

## What to Do

1. **With one hand, cradle Fan Tray 0 face down in front of its mounting point on the chassis.**
2. **With your other hand, insert the fan tray cable end into the connector on the front of the chassis.**

Insert the cable end until it clicks into place.



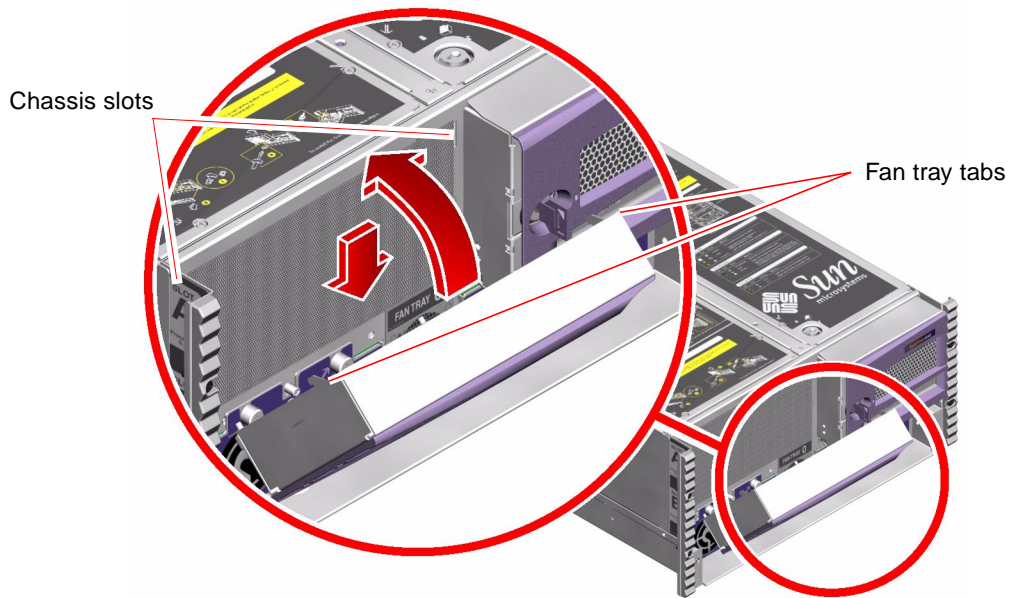
---

**Caution** – Do not drop the fan tray. The fan tray cable can be damaged if the fan tray is pulled too far away from the chassis.

---



3. Insert the two tabs on the fan tray frame into their corresponding slots on the front of the chassis.



- a. Be sure that the cable on the fan tray is tucked in between the fan units and the fan tray frame.
- b. Insert the left-side tab into its corresponding slot on the front of the chassis, followed by the right-side tab into its slot.

4. Tighten the two Phillips No. 2 captive screws that secure Fan Tray 0 to the chassis.



Fan Tray 0 mounting screws

## What Next

Complete these tasks:

- “How to Install the Power Supply Access Panel” on page 48
- “How to Power On the System” on page 18

## Servicing the CPU/Memory Board and Related Components

---

This chapter contains the following sections:

- “How to Remove the CPU Access Panel” on page 72
- “How to Install the CPU Access Panel” on page 74
- “How to Remove a CPU/Memory Board” on page 76
- “How to Install a CPU/Memory Board” on page 79
- “About Memory Modules” on page 82
- “How to Remove a Memory Module” on page 85
- “How to Install a Memory Module” on page 89

---

# How to Remove the CPU Access Panel

## Before You Begin

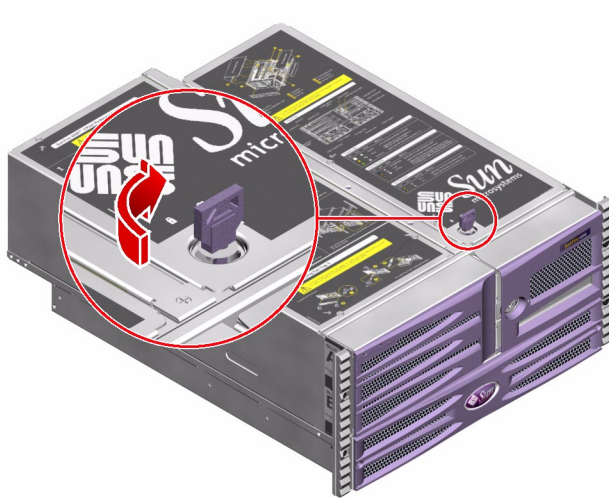
Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Avoid Electrostatic Discharge" on page 41

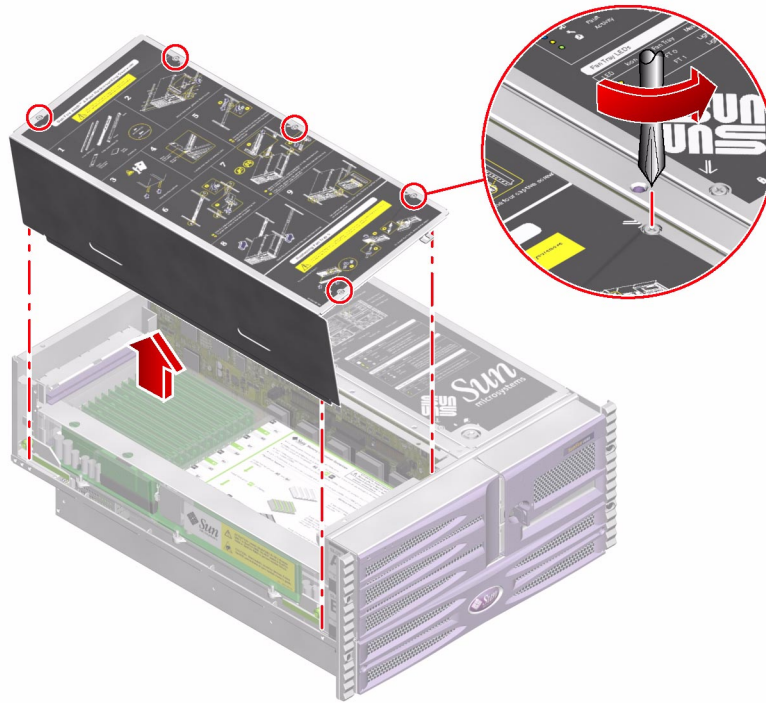
## What to Do

- 1. Rotate the top panel lock to the Unlocked position.**

The top panel lock secures both the CPU access panel and the PCI access panel.



2. Loosen the five Phillips No. 2 captive screws securing the access panel to the chassis.



3. Pull the panel straight up and off the chassis.

## What Next

Complete this task:

- “How to Install the CPU Access Panel” on page 74

---

# How to Install the CPU Access Panel

## Before You Begin

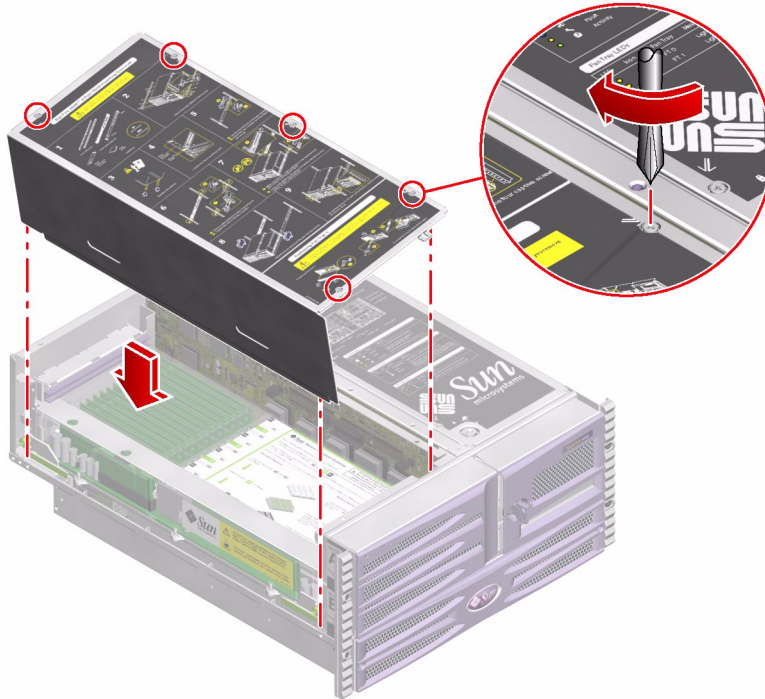
Complete this task:

- “How to Remove the CPU Access Panel” on page 72

## What to Do

1. Make sure that the top panel lock is in the Unlocked position.
2. Position the CPU access panel into its place on the chassis.

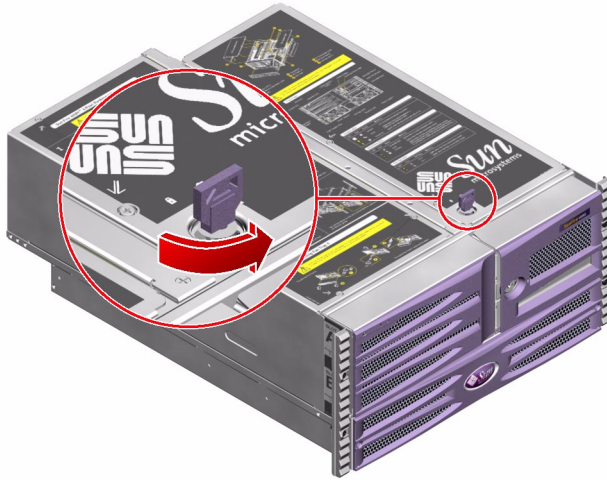
Insert the four tabs along the inside edge of the CPU access panel into their corresponding slots in the chassis lip.



3. Tighten the five captive Phillips No. 2 screws that secure the access panel to the chassis.

4. Secure the top panel lock.

The top panel lock secures both the CPU access panel and the PCI access panel.



## What Next

Complete these tasks:

- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

---

# How to Remove a CPU/Memory Board

---

**Note** – You must remove the CPU/Memory board from the system to service the memory modules.

---

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the CPU Access Panel” on page 72
- “How to Avoid Electrostatic Discharge” on page 41

---

**Note** – Use only Sun Fire V490 CPU/Memory boards in the Sun Fire V490 system.

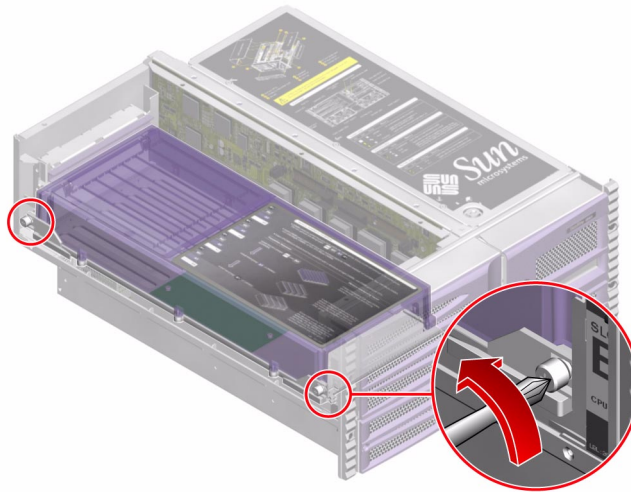
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## What to Do

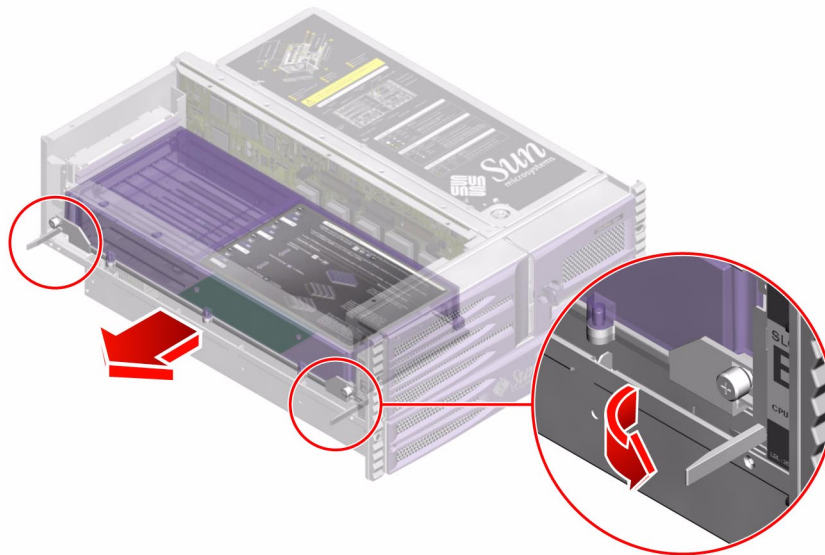
1. **Identify the CPU/Memory board to be removed.**



2. Loosen the two Phillips No. 2 captive screws securing the CPU/Memory board to the chassis.



3. Rotate the CPU/Memory board ejector levers outward so that the CPU/Memory board connectors disengage from the centerplane.



4. Pull the CPU/Memory board from the chassis and place it on an antistatic mat.



---

**Caution** – The CPU/Memory board is heavy. Be sure to support the CPU/Memory board from underneath as you remove it from the system.

---



---

**Caution** – The CPU/Memory board can be hot. Handle the underside of the CPU/Memory board carefully to avoid injury.

---

---

**Note** – If you are not installing a new CPU/Memory board (that is, running the system with a vacant CPU/Memory board slot), Sun recommends installing a dust cover on the centerplane and CPU/Memory board connectors. See “Centerplane Connectors” on page 207 for the connector location.

---

## What Next

Complete this task:

- “How to Install a CPU/Memory Board” on page 79

---

# How to Install a CPU/Memory Board

---

**Note** – You must use CPU/Memory boards with the same clock speed. For more information, see your *Sun Fire V490 Server Administration Guide*.

---

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the CPU Access Panel” on page 72
- “How to Avoid Electrostatic Discharge” on page 41

If you are replacing an old CPU/Memory board with a new one, you may need to migrate the memory modules from the old CPU/Memory board to the new one. See the following sections for more information about migrating memory modules:

- “About Memory Modules” on page 82
- “How to Remove a Memory Module” on page 85
- “How to Install a Memory Module” on page 89

---

**Note** – Use only Sun Fire V490 CPU/Memory boards in the Sun Fire V490 system.

---

## What to Do

1. **Locate the CPU/Memory board slot into which you want to install the CPU/Memory board.**

The CPU/Memory board slots are marked on the side of the chassis.

2. **If a CPU/Memory board connector dust cover or connector protector is installed on the centerplane and CPU/Memory board connectors, remove it.**



---

**Caution** – Do not attempt to install the CPU/Memory board before removing the dust cover. Doing so could damage the CPU/Memory board or the centerplane.

---

Keep the dust cover for future use.

3. Make sure that the ejector levers on the CPU/Memory board are rotated out 90 degrees.



---

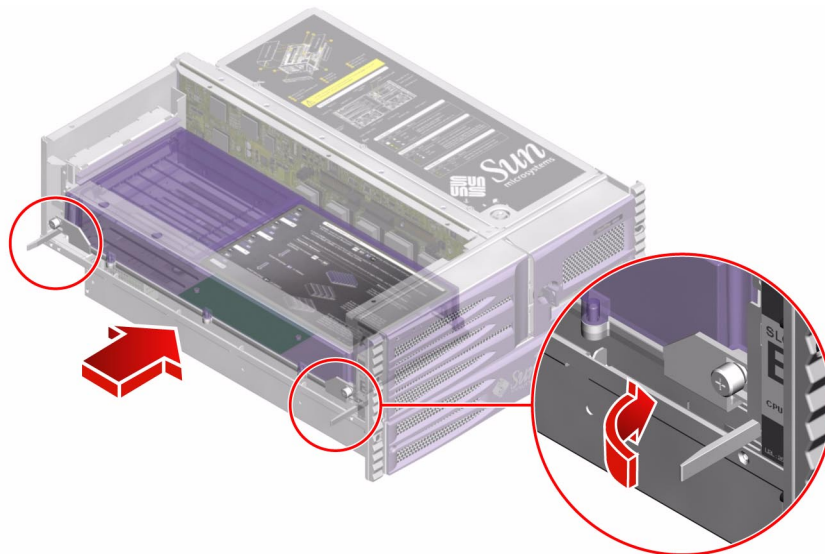
**Caution** – The CPU/Memory board is heavy. Be sure to support the CPU/Memory board from underneath as you install it into the system.

---

4. Slide the CPU/Memory board into the guides in the chassis.

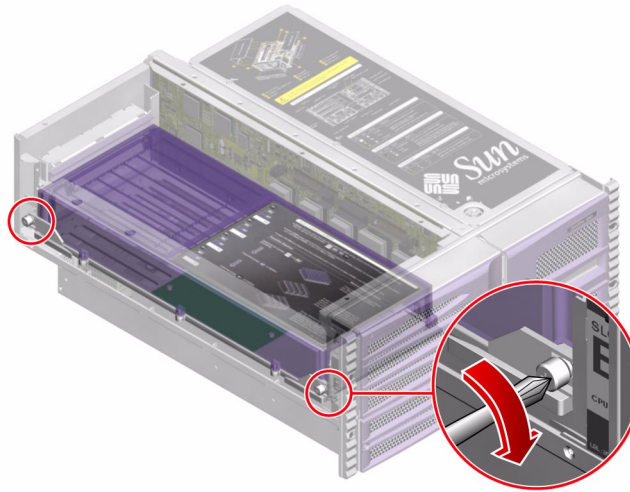
Slide the board into the system until the connectors on the board begin to engage the sockets on the centerplane and the ejector levers begin to engage the bracket.

5. Push in the two ejector levers until they are completely pressed into their slots.



6. Hand-tighten the two captive screws on the CPU/Memory board.

7. Using a Phillips No. 2 screwdriver, tighten the right-side captive screw (close to the front of the system).



8. Using a Phillips No. 2 screwdriver, tighten the left-side captive screw (close to the back of the system).

## What Next

Complete these tasks:

- “How to Install the CPU Access Panel” on page 74
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18
- “How to Initiate a Reconfiguration Boot” on page 23

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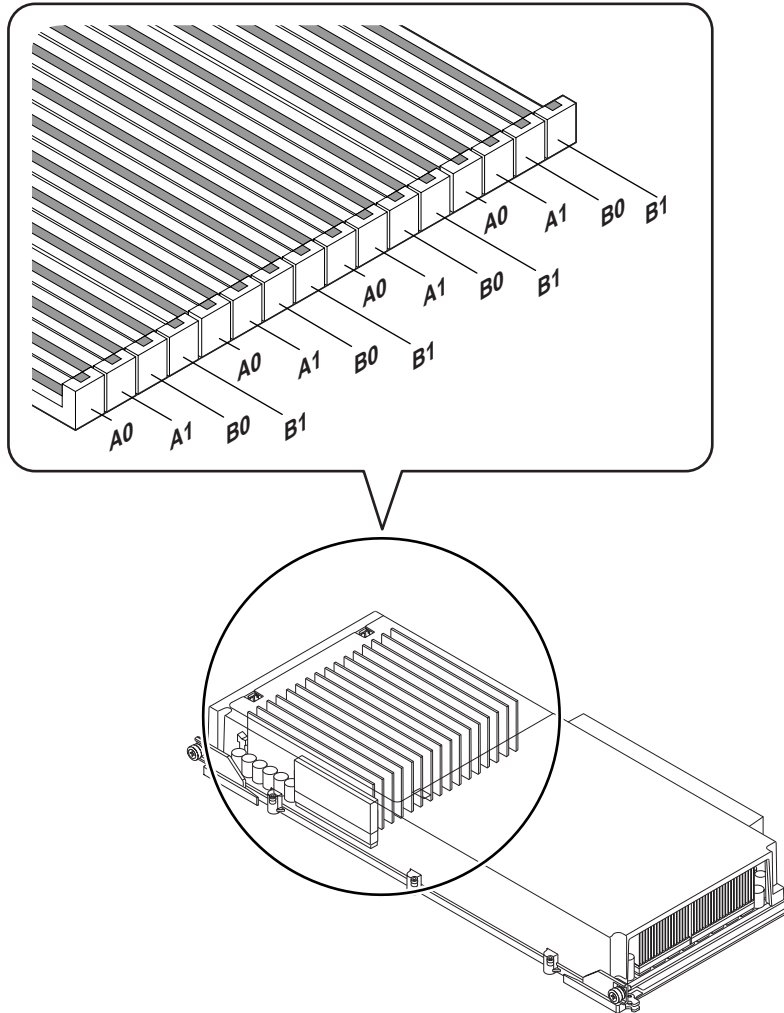
# About Memory Modules

The Sun Fire V490 server uses 3.3V, high-capacity dual inline memory modules (DIMMs). The DIMMs are built with synchronous dynamic random access memory (SDRAM) chips that operate at a 75-MHz clock frequency. The system supports DIMMs with 512-Mbyte and 1-Gbyte capacities

Each CPU/Memory board contains slots for 16 DIMMs. Total system memory available is 32 Gbytes (two CPU/Memory boards fully populated with 1-Gbyte DIMMs).

Within each CPU/Memory board, the 16 DIMM slots are organized into groups of four. The system reads from, or writes to, all four DIMMs in a group simultaneously. DIMMs, therefore, must be added in sets of four.

The figure below shows the DIMM slots and DIMM groups on a CPU/Memory board. Every fourth slot belongs to the same DIMM group. The four groups are designated A0, A1, B0, and B1.



Follow these configuration rules when installing memory:

- DIMMs must be added four at a time within the same group of DIMM slots; every fourth slot belongs to the same DIMM group.
- Each group used must have four identical capacity DIMMs installed (for example, four 512-Mbyte DIMMs or four 1-Gbyte DIMMs).

- Each CPU/Memory board must be populated with a minimum of eight identical DIMMs, with at least one A group populated (A0 or A1) and at least one B group populated (B0 or B1).

The following table summarizes the guidelines for installing DIMMs in a CPU/Memory board.

**TABLE 4-1** DIMM Installation Guidelines

Population Sequence	Memory Interleaving Factor
Install first eight DIMMs into groups A0 and B0 (so that every other slot is occupied).	Four-way interleaving if all eight DIMMs are identical; two-way interleaving otherwise
Install next four DIMMs into group A1.	Four-way interleaving between any two groups configured identically; two-way interleaving in any group that does not match the capacities used in any other group
Fill last four available slots (group B1).	Eight-way interleaving if all 16 DIMMs are identical; four-way interleaving between any two groups configured identically; two-way interleaving in any group that does not match the capacities used in any other group

For additional information about DIMMs, see your *Sun Fire V490 Server Administration Guide*.



---

# How to Remove a Memory Module

## Before You Begin

Read the section:

- “About Memory Modules” on page 82

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the CPU Access Panel” on page 72
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove a CPU/Memory Board” on page 76

## What to Do



---

**Caution** – DIMMs are made of electronic components that are extremely sensitive to static electricity. Static electricity from your clothes or work environment can destroy the DIMM. Do not remove any DIMM from its antistatic packaging until you are ready to install it. Handle the modules only by their edges. Do not touch the components or any metal parts, including the gold contacts on the bottom edge of the module. Always wear a grounding strap when you handle the modules.

---

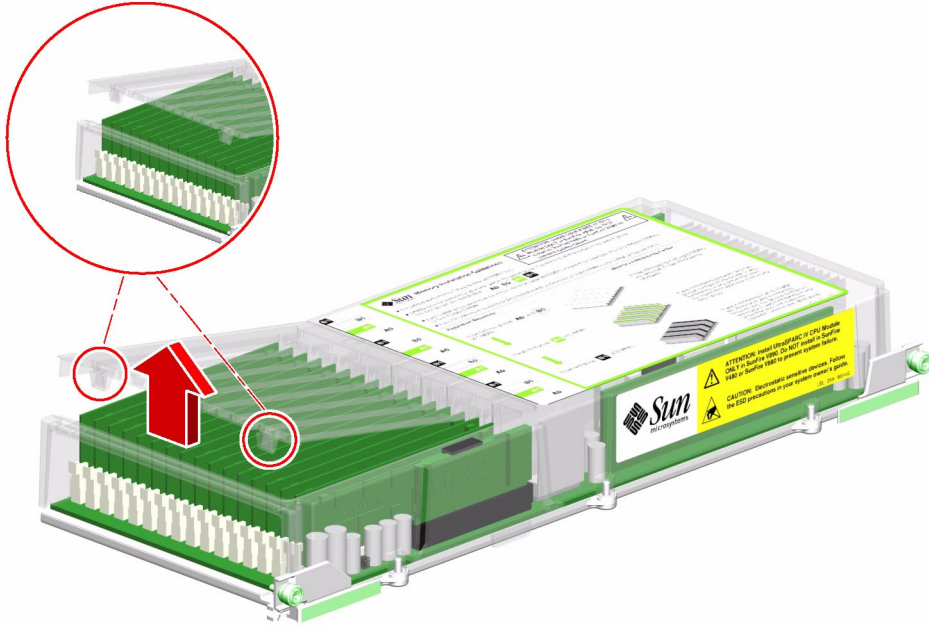
---

**Note** – You must remove the CPU/Memory board from the system before removing memory modules.

---

**1. Remove the DIMM access panel from the CPU/Memory board.**

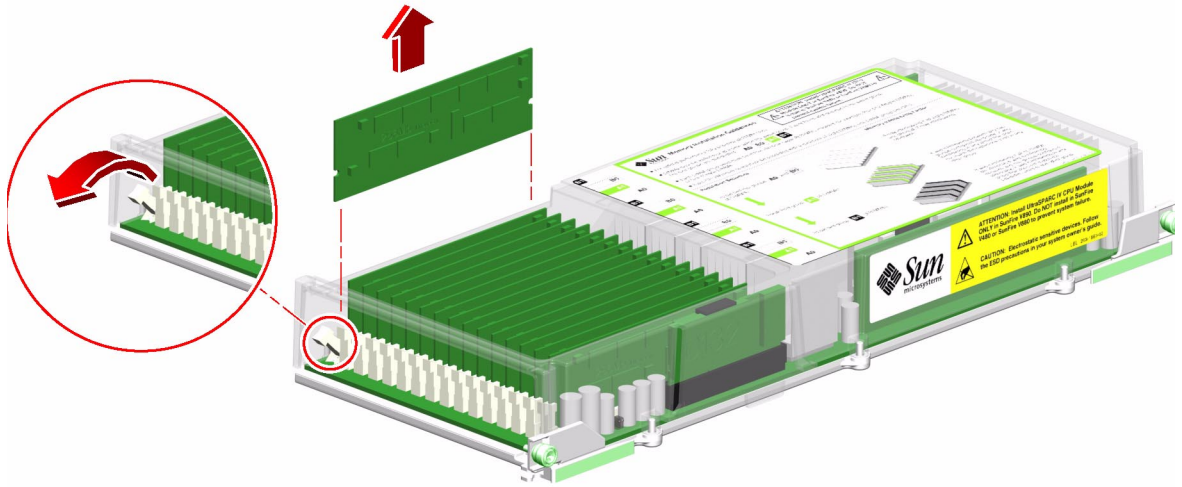
Push both tabs inward until you can lift the access panel free of the CPU/Memory board shroud.



**2. Identify the memory module to be removed.**

**3. Push down on the ejector levers on each end of the memory module until it pops out of its connector.**

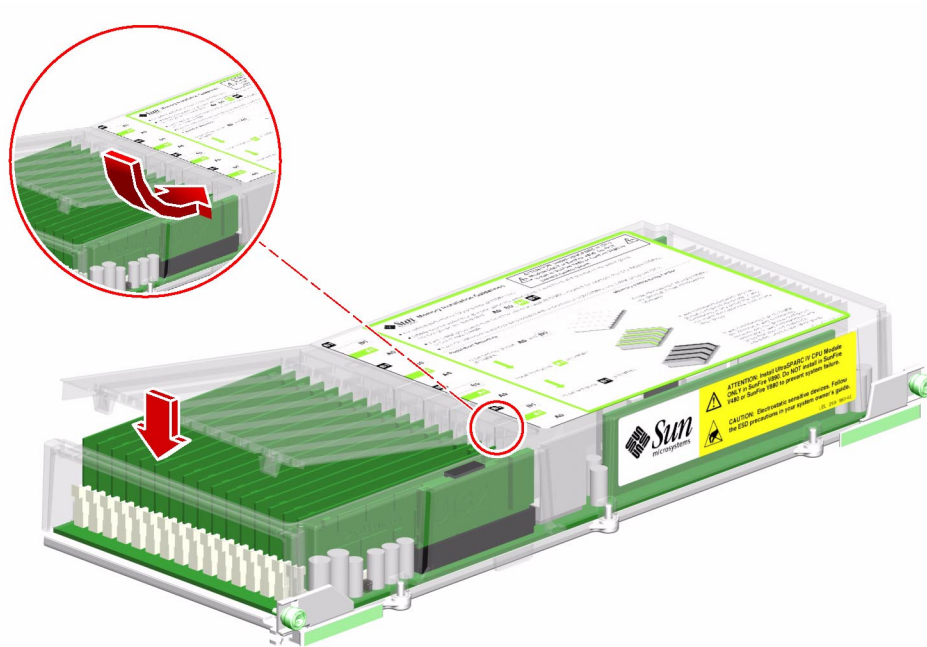
Apply even pressure on both levers.



4. Grasp the top corners of the memory module and pull it up and out of its connector.
5. Place the memory module on an antistatic mat.
6. Repeat Step 2 through Step 5 for all the DIMMs to be removed.

## 7. Install the DIMM access panel onto the CPU/Memory board.

To fully engage the tabs on the access panel, push them in until you hear a click.



## What Next

To replace a memory module, complete this task:

- "How to Install a Memory Module" on page 89

---

# How to Install a Memory Module

## Before You Begin

Read the section:

- “About Memory Modules” on page 82

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the CPU Access Panel” on page 72
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove a CPU/Memory Board” on page 76

## What to Do



---

**Caution** – DIMMs are made of electronic components that are extremely sensitive to static electricity. Static electricity from your clothes or work environment can destroy the DIMM. Do not remove any DIMM from its antistatic packaging until you are ready to install it. Handle the modules only by their edges. Do not touch the components or any metal parts, including the gold contacts on the bottom edge of the module. Always wear a grounding strap when you handle the modules.

---

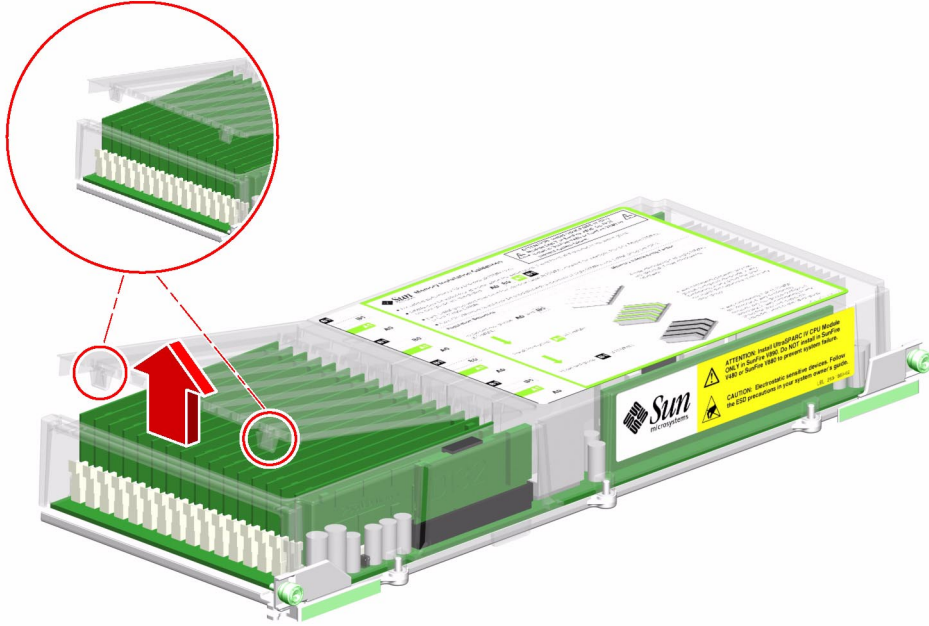
---

**Note** – You must remove the CPU/Memory board before installing memory modules.

---

**1. Remove the DIMM access panel from the CPU/Memory board.**

Push both tabs inward until you can lift the access panel free of the CPU/Memory board shroud.

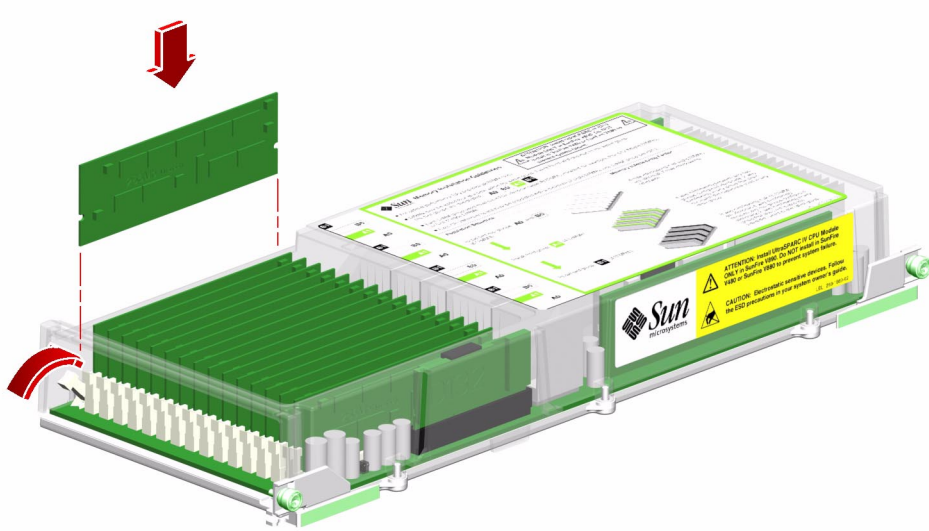


**2. Locate the slot into which you will install the memory module.**

**3. Rotate out the memory module ejector levers for that slot.**

4. Holding the bottom edge of the module parallel to its slot, carefully align the module so that each of its contacts is centered on a connector pin.

Be sure the DIMM is correctly oriented. A notch along the bottom of the DIMM corresponds to a tab on the connector.



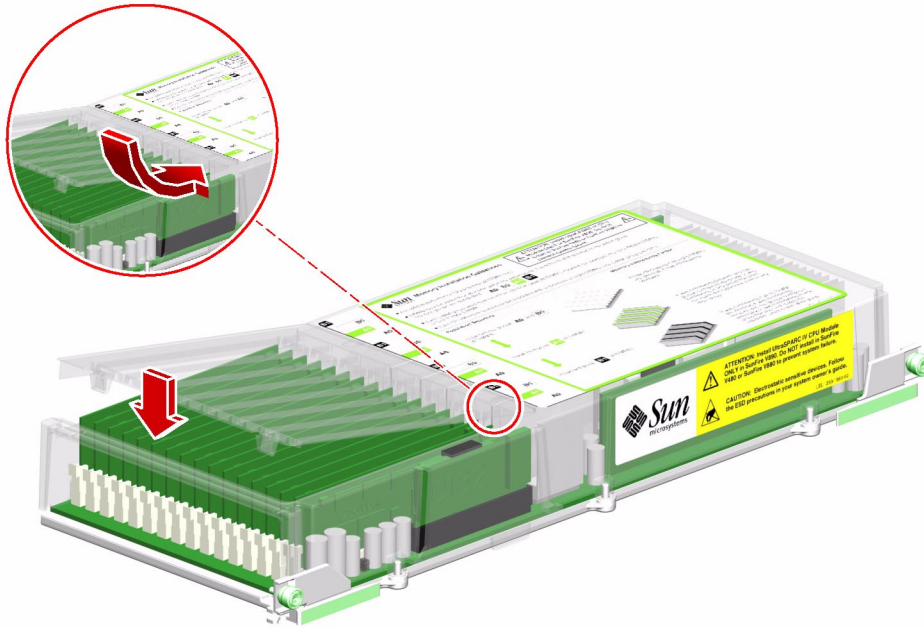
5. Push firmly and evenly on both ends of the memory module until its bottom edge is firmly seated in the connector. You will hear a click when the ejector levers lock into place.

Make sure that the levers are fully engaged against the DIMMs.

6. Repeat Step 2 through Step 5 for all DIMMs to be installed.

## 7. Install the DIMM access panel onto the CPU/Memory board.

To fully engage the tabs on the access panel, push them in until you hear a click.



## What Next

Complete these tasks:

- “How to Install a CPU/Memory Board” on page 79
- “How to Install the CPU Access Panel” on page 74
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18



## Servicing the PCI Riser Board and Related Components

---

This chapter contains the following sections:

- “How to Remove the PCI Access Panel” on page 94
- “How to Install the PCI Access Panel” on page 96
- “How to Remove Fan Tray 1” on page 97
- “How to Install Fan Tray 1” on page 99
- “How to Remove the System Controller (SC) Card” on page 101
- “How to Install the System Controller (SC) Card” on page 103
- “How to Remove a PCI Card” on page 106
- “How to Install a PCI Card” on page 109
- “How to Install a Sun StorEdge PCI Dual Fibre-Channel Host Adapter Card” on page 112
- “How to Remove the PCI Riser Board” on page 117
- “How to Install the PCI Riser Board” on page 120
- “How to Remove the IDPROM Module” on page 123
- “How to Install the IDPROM Module” on page 124

---

# How to Remove the PCI Access Panel

## Before You Begin

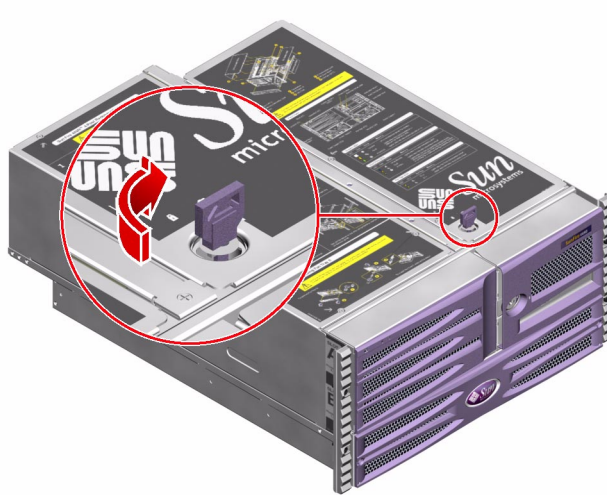
Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Avoid Electrostatic Discharge" on page 41

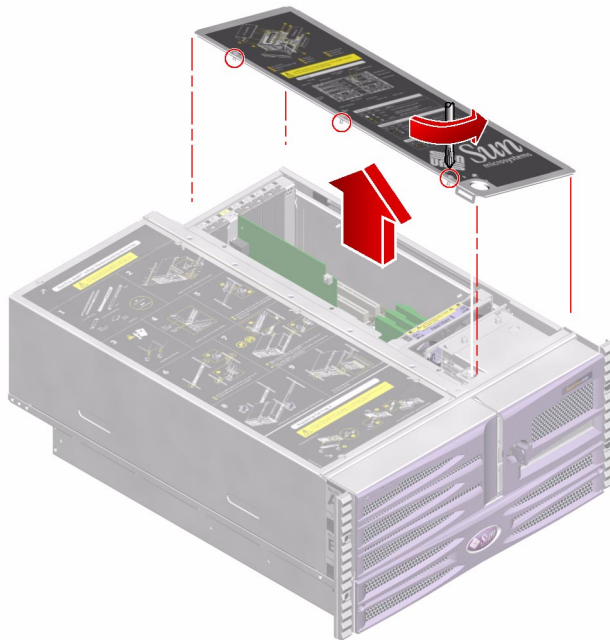
## What to Do

- 1. Rotate the top panel lock to the Unlocked position.**

The top panel lock secures both the CPU access panel and the PCI access panel.



2. Loosen the three Phillips No. 2 captive screws securing the access panel to the chassis.



3. Pull the panel up and off the chassis.  
Pull the access panel up from the left-side edge.

## What Next

Complete this task:

- “How to Install the PCI Access Panel” on page 96

---

# How to Install the PCI Access Panel

## Before You Begin

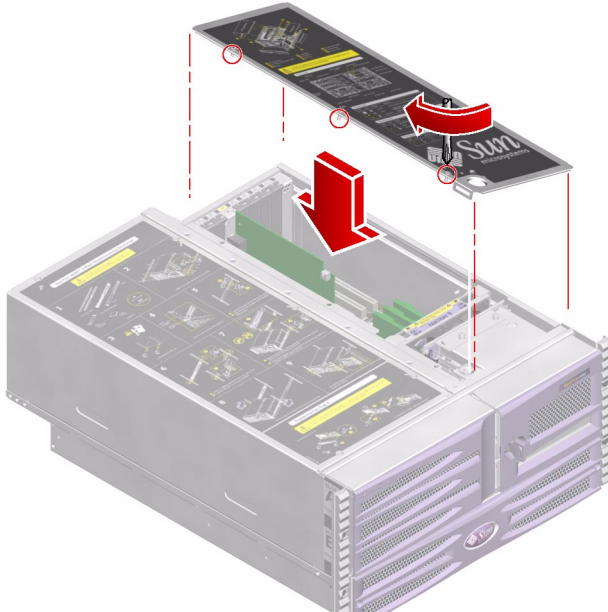
Complete this task:

- “How to Remove the PCI Access Panel” on page 94

## What to Do

1. Make sure that the top panel lock is in the Unlocked position.
2. Position the PCI access panel into its place on the chassis.

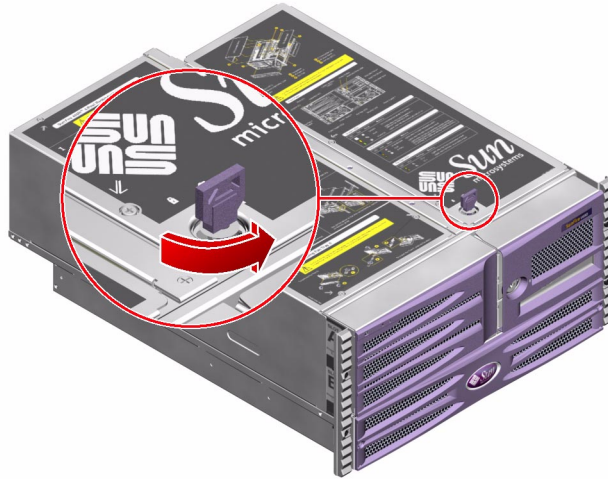
Align the lip on the right side of the access panel with the corresponding ridge on the chassis.



3. Tighten the three Phillips No. 2 captive screws that secure the access panel to the chassis.

#### 4. Secure the top panel lock.

The top panel lock secures both the CPU access panel and the PCI access panel.



## What Next

Complete these tasks:

- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

---

## How to Remove Fan Tray 1



---

**Caution** – Do not power on the system without a functioning Fan Tray 1 installed. Doing so could overheat and seriously damage the system.

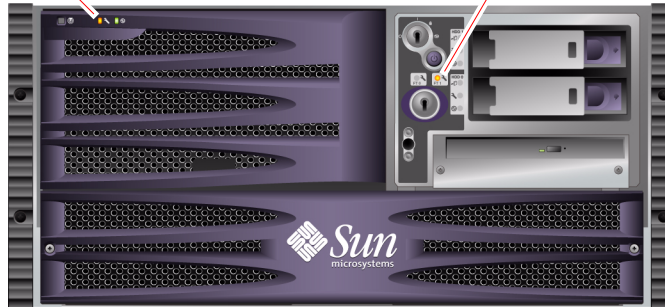
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## Before You Begin

If Fan Tray 1 fails, the system Fault LED and FT 1 Fault LED will light.

System Fault LED

FT 1 Fault LED



Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Avoid Electrostatic Discharge" on page 41
- "How to Remove the PCI Access Panel" on page 94

## What to Do

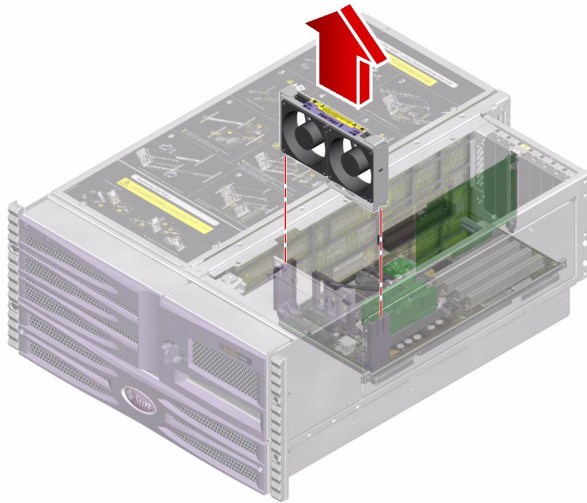


---

**Caution** – Fan Tray 1 does not include fan guards. Serious injury can result if you attempt to remove it while the system is running.

---

- Pull the fan tray straight up and out of its bracket on the PCI riser board, and set it aside.



## What Next

Complete this task:

- “How to Install Fan Tray 1” on page 99

---

## How to Install Fan Tray 1



---

**Caution** – Do not power on the system without a functioning Fan Tray 1 installed. Doing so could overheat and seriously damage the system.

---

## Before You Begin

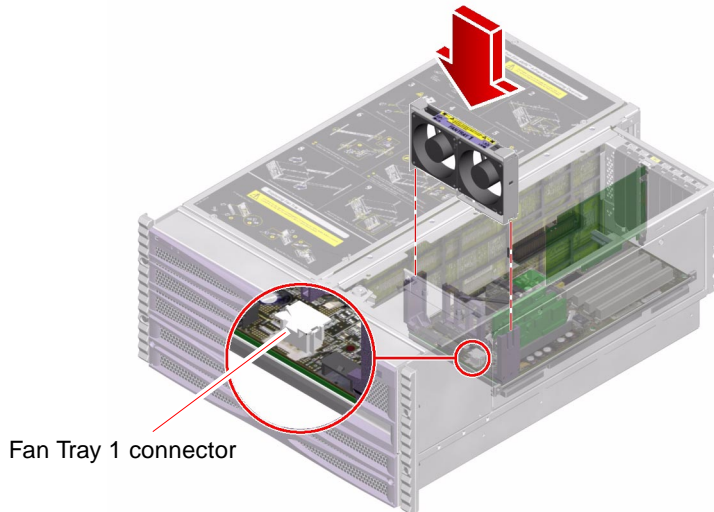
Complete this task:

- “How to Remove Fan Tray 1” on page 97

## What to Do

- **Insert the fan tray into its bracket until the fan tray is firmly seated.**

Make sure that the fan tray connector is oriented to attach to the corresponding connector on the PCI riser board.



## What Next

Complete these tasks:

- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18



---

# How to Remove the System Controller (SC) Card

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41

## What to Do



---

**Caution** – The system supplies power to the system controller (SC) card even when the system is powered off. To avoid personal injury or damage to the SC card, you must disconnect the AC power cords before servicing the SC card.

---

1. **Disconnect the AC power cords from the back of the system.**



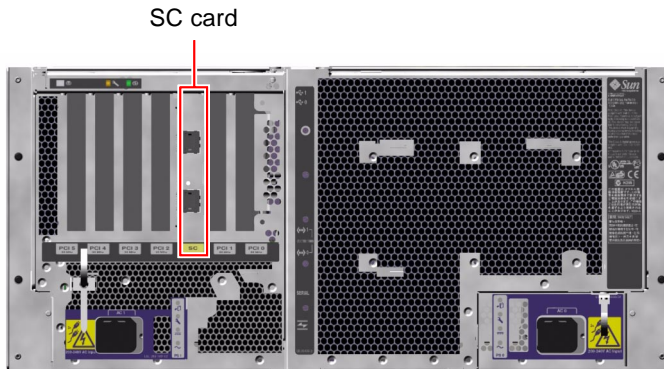
---

**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

**2. Locate the SC card.**

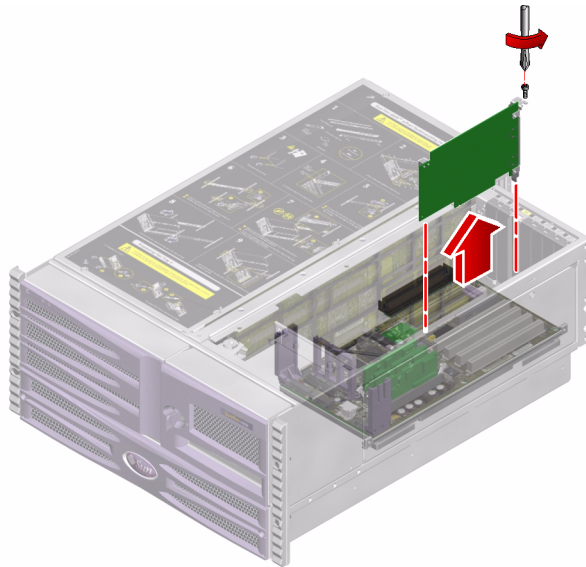
The SC card is installed in the fifth slot from the edge of the PCI riser board. It is labeled "SC" on the back panel.



**3. Disconnect any external cable(s) attached to the faceplate of the SC card.**

Note and label cable connector locations.

**4. Using a Phillips No. 1 screwdriver, remove the screw securing the card to the chassis back panel.**





---

**Caution** – Be sure that the AC power cords are disconnected from the system before removing the SC card.

---

5. Pull the SC card from its slot on the PCI riser board.



---

**Caution** – Do not apply excessive force to one end or one side of the card. Doing so could damage the card.

---

Hold the SC card by the faceplate and its opposite edge, and pull up while rocking the card from end to end until it is freed from its slot.

6. Place the SC card on an antistatic mat.

## What Next

To replace the SC card, complete this task:

- “How to Install the System Controller (SC) Card” on page 103

---

# How to Install the System Controller (SC) Card



---

**Caution** – Before replacing the SC card, be sure that the AC power cords are disconnected from the system.

---

## Before You Begin



---

**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

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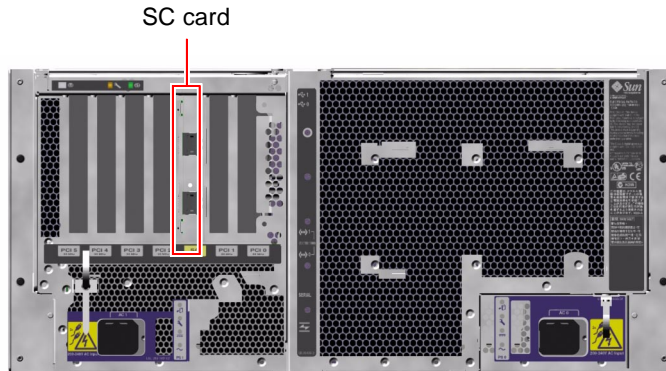
Complete this task:

- “How to Remove the System Controller (SC) Card” on page 101

# What to Do

## 1. Locate the slot for the SC card.

The SC card is installed in the fifth slot from the edge of the PCI riser board. It is labeled "SC" on the back panel.



---

**Note** – Make sure that you install the SC card into the SC slot. Though the SC card can physically fit into a PCI slot, it will not function if installed there.

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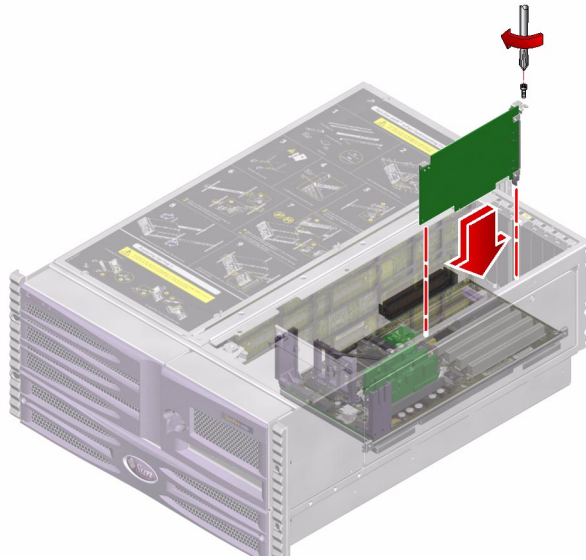
**Caution** – Be sure that the AC power cords are disconnected from the system before installing the SC card.

---

## 2. Insert the SC card into its slot on the PCI riser board.

- a. Insert the faceplate end of the card into the appropriate opening in the back panel.

- b. Insert the opposite end of the card into the appropriate card guide so that the card is aligned evenly with the connectors on the PCI riser board.



- c. Push the card into the connectors on the PCI riser board.  
Apply even pressure along the edge of the card.
3. Secure the SC card faceplate to the back panel with the Phillips screw.
4. Connect the Ethernet and serial cables to the faceplate of the SC card.
5. Connect the AC power cords to the back of the system.

## What Next

Complete these tasks:

- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

---

# How to Remove a PCI Card

## Before You Begin

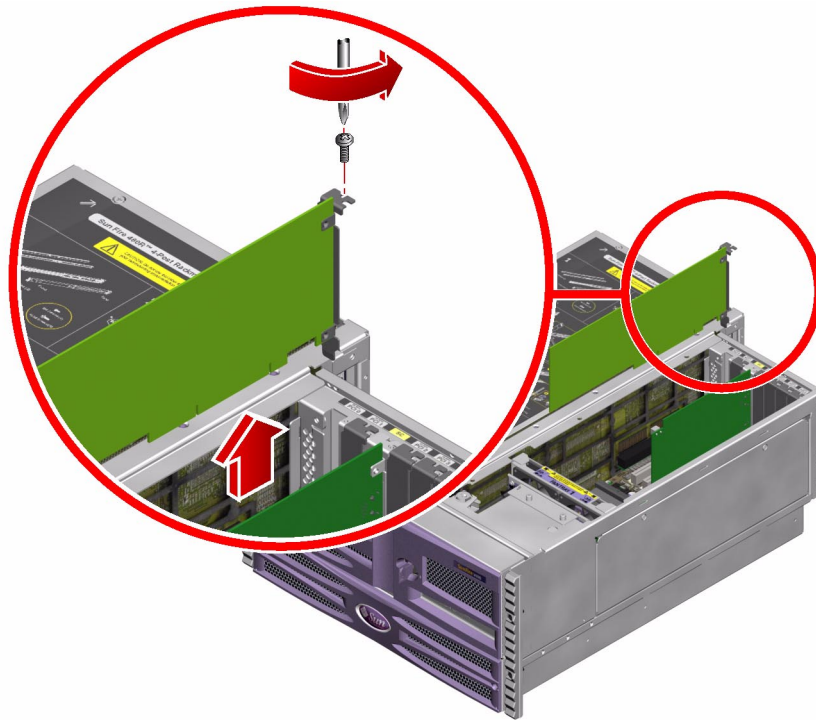
Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Remove the PCI Access Panel" on page 94
- "How to Avoid Electrostatic Discharge" on page 41

## What to Do

1. **Disconnect any external cables attached to the faceplate of the PCI card.**
2. **Disconnect any cables connected to the internal connectors on the PCI card.**

3. Using a Phillips No. 1 screwdriver, remove the screw securing the card to the chassis back panel.



4. Pull the PCI card from its slot.



---

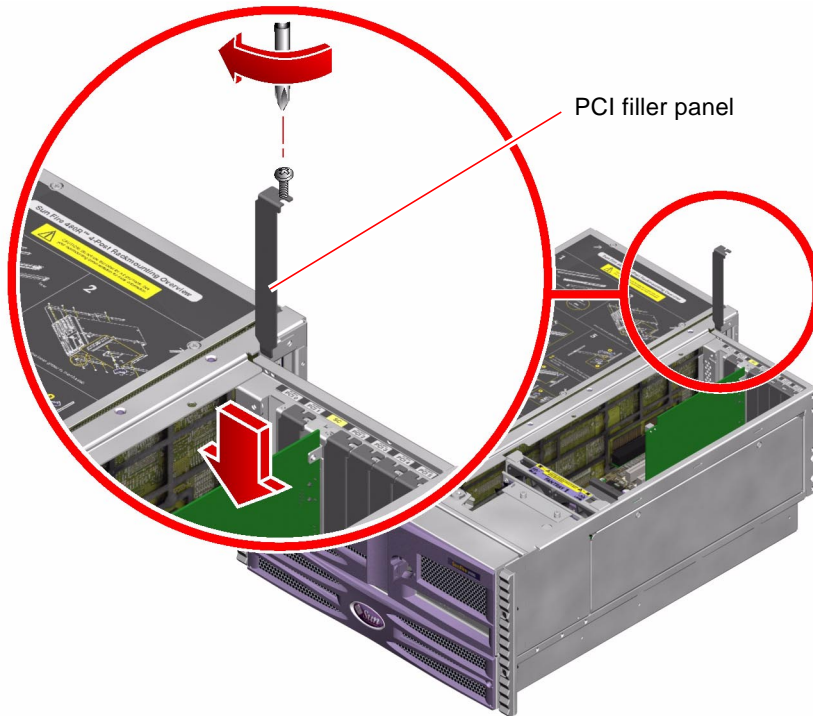
**Caution** – Do not apply excessive force to one end or one side of the card. Doing so could damage the card.

---

Hold the card by the faceplate and its opposite edge, and pull up while rocking the card from end to end until it is freed from its slot.

5. Place the PCI card on an antistatic mat.

6. If you are not replacing the PCI card, install a PCI filler panel to prevent dust from entering the system, and to ensure proper cooling.



- a. Slide the filler panel into the appropriate slot.
- b. Replace the Phillips No. 1 screw that secures the filler panel to the chassis back panel.

## What Next

To install a PCI card, complete this task:

- “How to Install a PCI Card” on page 109

To return the system to operation without installing a new PCI card, complete these tasks:

- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18
- “How to Initiate a Reconfiguration Boot” on page 23



---

# How to Install a PCI Card

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41

Read the documentation supplied with the PCI card for information about jumper settings, PCI slot requirements, and cable connections.

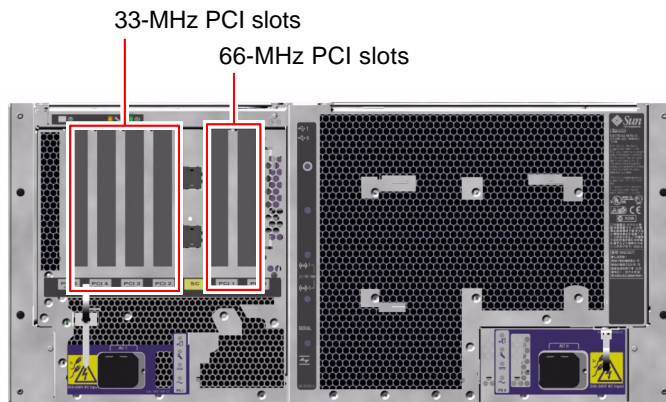
## What to Do

### 1. Locate an unused PCI slot.

---

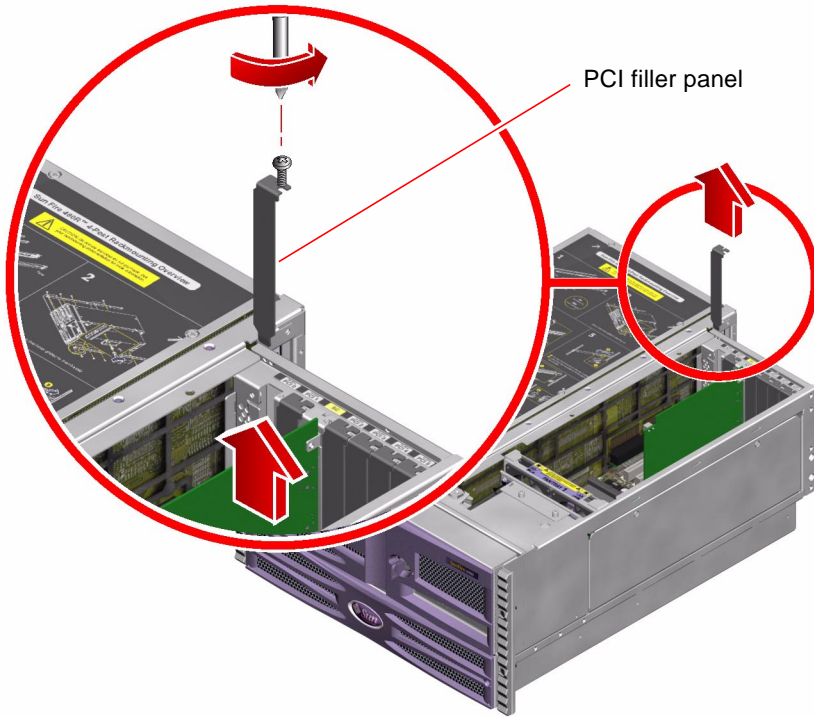
**Note** – PCI slots 0 and 1 are for 66-MHz cards. Installing a 33-MHz card into PCI slot 0 or 1 will cause both slots to operate at 33 MHz.

---



- ### 2. If you are installing a PCI card into an unused slot, remove the corresponding filler panel from the chassis back panel. Otherwise go to Step 3.

- a. Remove the Phillips No. 1 screw securing the PCI filler panel to the chassis back panel.
- b. Lift out the filler panel.



**3. Insert the PCI card into the appropriate slot on the PCI riser board.**

There are six PCI slots on the PCI riser board.

- a. Insert the faceplate end of the card into the appropriate opening in the back panel.

If you are installing a PCI long card, guide the opposite end of the PCI card into the corresponding card runner on the PCI riser board.

b. Push the card into the corresponding connector on the PCI riser board.

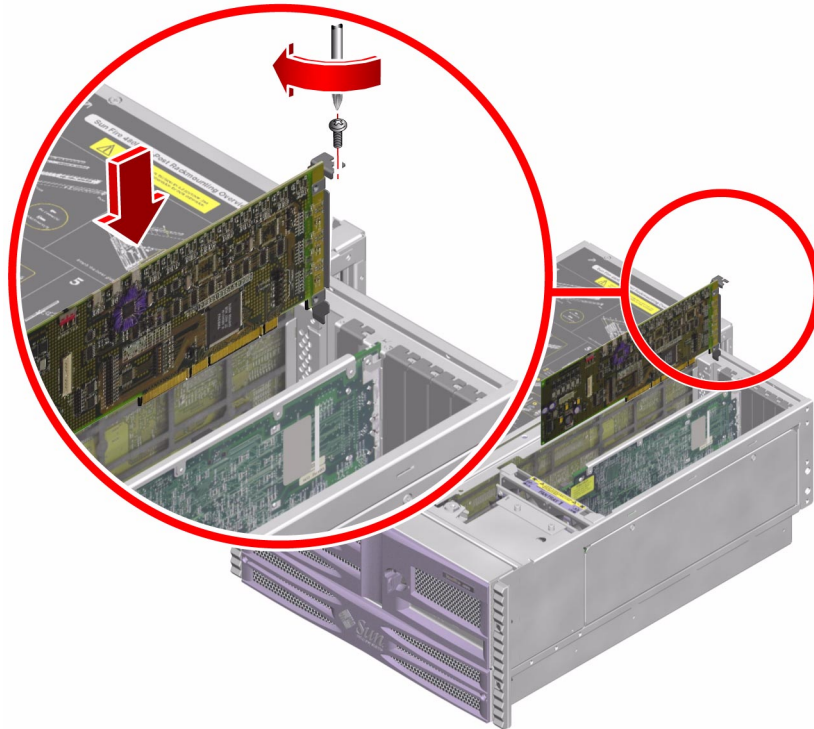


---

**Caution** – Do not apply excessive force to one end or one side of the card. Doing so could damage the card.

---

Apply even pressure along the edge of the card.



4. Secure the PCI card faceplate to the back panel with the Phillips screw.
5. If necessary, connect any internal cables to the PCI card's internal connectors.
6. If necessary, connect any external cables to the PCI card.

## What Next

Complete these tasks:

- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18
- “How to Initiate a Reconfiguration Boot” on page 23

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# How to Install a Sun StorEdge PCI Dual Fibre-Channel Host Adapter Card

This procedure describes how to install an optional Sun StorEdge™ PCI Dual Fibre-Channel Host Adapter.

## Before You Begin

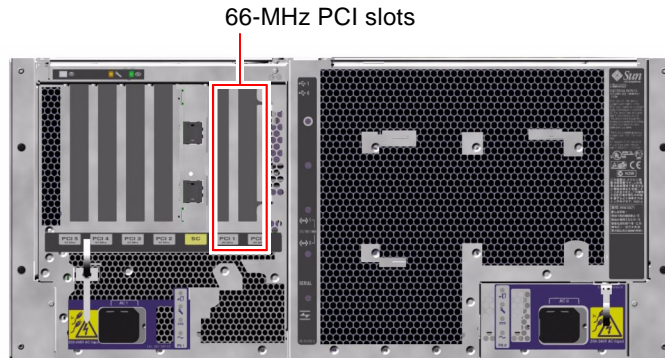
Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41

Read the documentation supplied with the Sun StorEdge PCI Dual Fibre-Channel Host Adapter for information about jumper settings, PCI slot requirements, and cable connections.

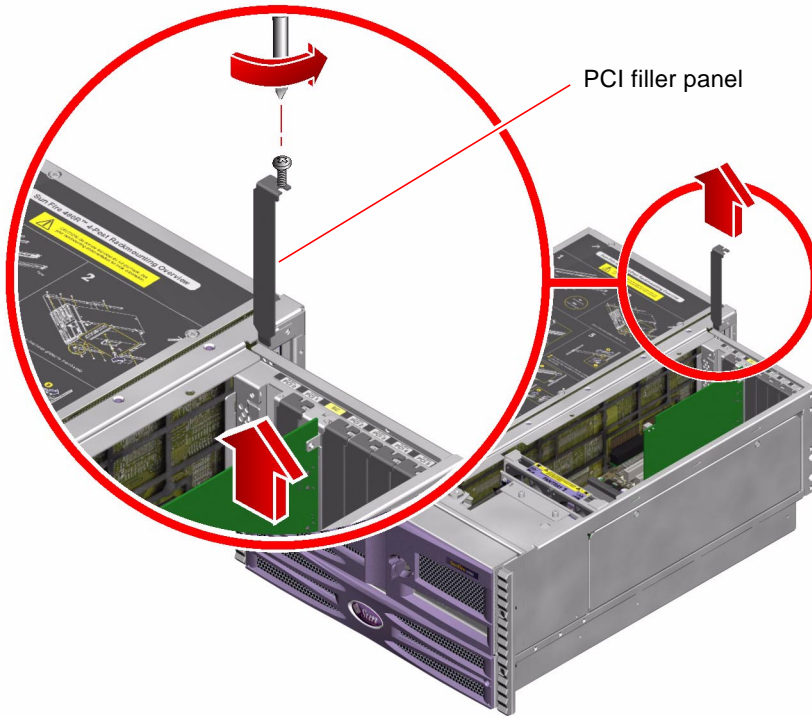
# What to Do

1. Locate an unused 66-MHz PCI slot, either slot 0 or slot 1.



2. If you are installing the Sun StorEdge PCI Dual Fibre-Channel Host Adapter into an unused slot, remove the corresponding filler panel from the chassis back panel. Otherwise go to Step 3.
  - a. Remove the Phillips No. 1 screw securing the PCI filler panel to the chassis back panel.

b. Lift out the filler panel.



3. Insert the Sun StorEdge PCI Dual Fibre-Channel Host Adapter into the appropriate slot on the PCI riser board.

There are two 66-MHz PCI slots on the PCI riser board.

a. Insert the faceplate end of the card into the appropriate opening in the back panel.

b. Push the card into the corresponding connector on the PCI riser board.



---

**Caution** – Do not apply excessive force to one end or one side of the card. Doing so could damage the card.

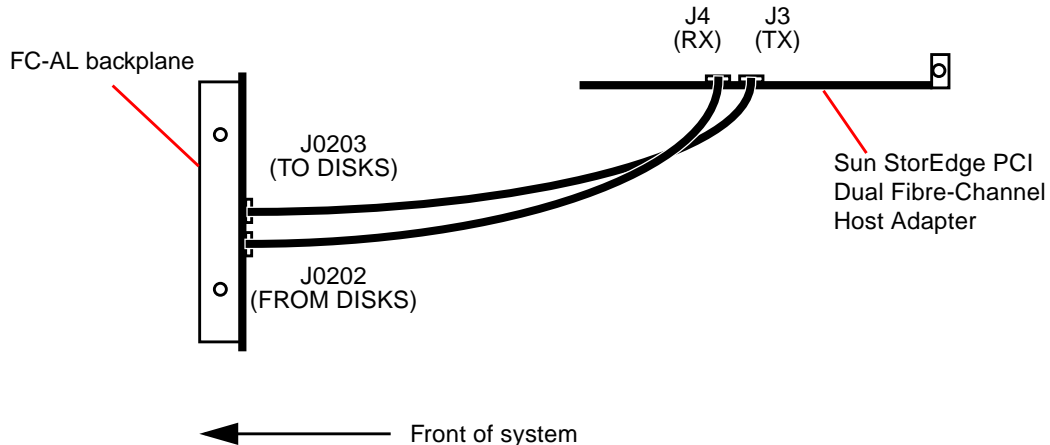
---

Apply even pressure along the edge of the card.

4. Using a Phillips No. 1 screwdriver, secure the card faceplate to the back panel.

5. Connect the two internal Loop B cables to the Sun StorEdge PCI Dual Fibre-Channel Host Adapter's internal connectors and the FC-AL backplane.

The Loop B cable assembly is purchased separately from the Sun StorEdge PCI Dual Fibre-Channel Host Adapter, and is unique to the Sun Fire V490 server. See "System Cables" on page 217 for the correct part number.



---

**Note** – Be sure to connect the cables as shown. Loop B will not function if the cables are connected incorrectly.

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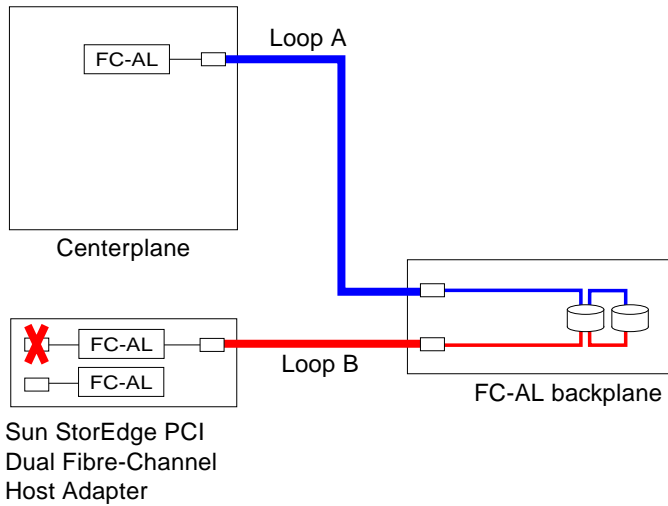
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**Note** – For cable routing information, see "Cable Connections and Routing" on page 160.

---

## 6. Connect any external cables to the PCI card.

Do not use the Sun StorEdge PCI Dual Fibre-Channel Host Adapter's external port 1 when FC-AL Loop B is connected to the FC-AL backplane.



## What Next

Complete these tasks:

- "How to Install the PCI Access Panel" on page 96
- "How to Slide the System Into the Cabinet" on page 31
- "How to Power On the System" on page 18
- "How to Initiate a Reconfiguration Boot" on page 23



---

# How to Remove the PCI Riser Board

## Before You Begin

Depopulate the PCI riser board by completing the following tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove Fan Tray 1” on page 97
- “How to Remove the System Controller (SC) Card” on page 101
- “How to Remove a PCI Card” on page 106

---

**Note** – You must remove all cables and cards from the PCI riser board before removing the PCI riser board from the system.

---



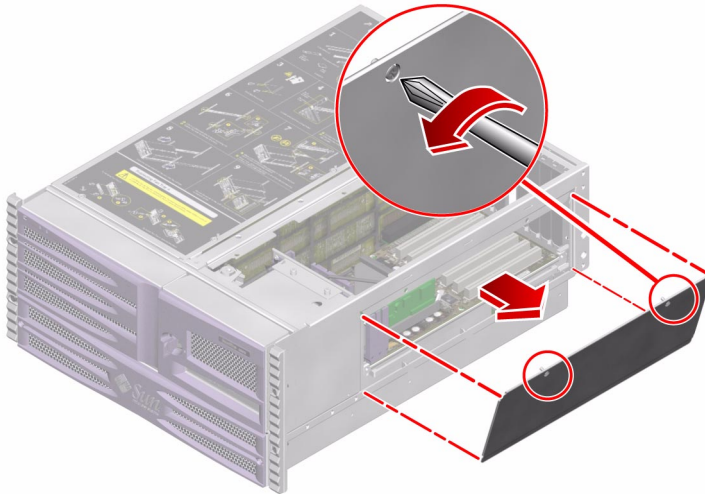
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**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

## What to Do

1. Make sure that the AC power cords are disconnected from the back of the system.
2. Remove the PCI riser board access panel.



- a. Loosen the two Phillips No. 2 captive screws securing the PCI riser board access panel to the chassis.
  - b. Tilt the access panel outward and pull it straight up to remove it from the chassis.
3. Disconnect the cables from the PCI riser board.
    - a. Disconnect the FC-AL power cable from J1901.  
Press the tab to release the cable end from its connector.

---

**Note** – For cable routing information, see “Cable Connections and Routing” on page 160.

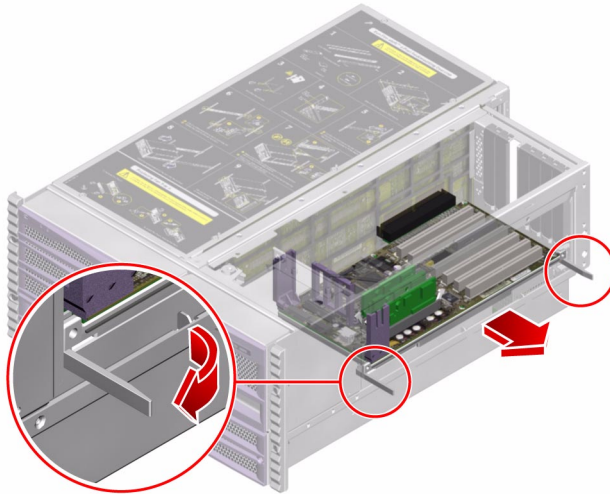
---

- b. Disconnect the system control switch/power button cable from J1401.  
Press the tab to release the cable end from its connector.
- c. Disconnect the removable media assembly (RMA) data cable from J1001.  
Pull up the ejector levers until the cable end comes off the connector.

d. Disconnect the Fan Tray 0 power cable from J2302.

Press the tab to release the cable end from its connector.

4. Remove the two Phillips No. 2 screws securing the PCI riser board to its mounting bracket.
5. Rotate the mounting levers outward to release the PCI riser board from the chassis.



6. Pull the PCI riser board out of the system and place it on an antistatic mat.  
Support the PCI riser board from underneath as you remove it from the system.

## What Next

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**Note** – If you are replacing the PCI riser board with a new one and you want to retain the system serial number and media access control (MAC) address, you must migrate the IDPROM module to the new PCI riser board.

---

If you are replacing the PCI riser board with a new one, complete this task:

- “How to Remove the IDPROM Module” on page 123

Complete this task:

- “How to Install the PCI Riser Board” on page 120

---

# How to Install the PCI Riser Board

## Before You Begin

Complete this task:

- “How to Remove the PCI Riser Board” on page 117

If you are replacing the PCI riser board with a new one, complete this task:

- “How to Install the IDPROM Module” on page 124



---

**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

## What to Do

### 1. Slide the PCI riser board into the system.

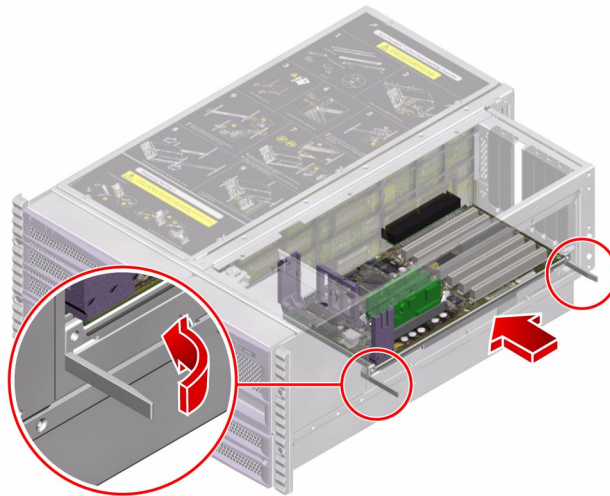
Make sure that the sides of the PCI riser board are inserted properly into their mounting rails, and that the mounting levers are fully extended.

---

**Note** – Be sure to keep all the cables clear of the left side of the PCI riser board as you insert it into the system.

---

2. Push the mounting levers inward to seat the PCI riser board connectors into their corresponding connectors on the centerplane.



3. Using a Phillips No. 2 screwdriver, replace the two screws that secure the PCI riser board to the chassis.
4. Reconnect the cables.
  - a. Connect the Fan Tray 0 power cable into J2302.

Push the connector into its socket until it snaps into place.

---

**Note** – For cable routing information, see “Cable Connections and Routing” on page 160.

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- b. Connect the RMA cable into J1001.

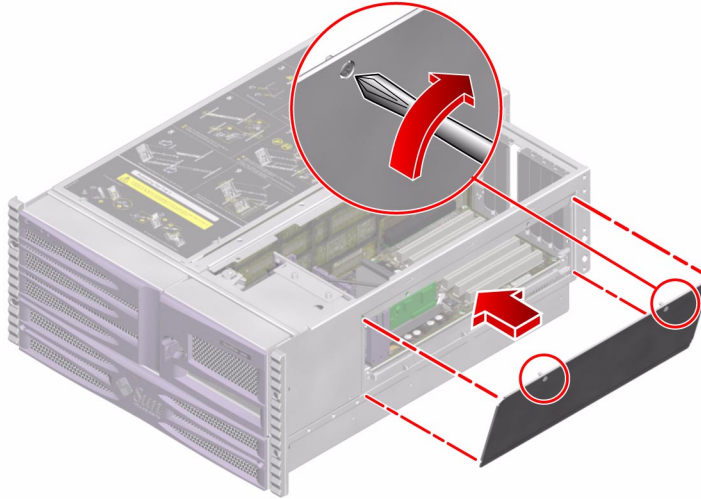
Push the connector into its socket until the two levers snap down into place.
  - c. Connect the system control switch/power button cable into J1401.

Push the connector into its socket until it snaps into place.
  - d. Connect the FC-AL power cable into J1901.

Push the connector into its socket until it snaps into place.
5. Replace the PCI riser board access panel.

- a. Insert the tabs on the PCI riser board access panel into their corresponding slots on the chassis.

Insert the bottom edge of the access panel first and rotate the top edge inward. Push outward from the inside of the access panel until the tabs drop into place.



- b. Tighten the two Phillips No. 2 captive screws that secure the PCI riser board access panel to the chassis.

## What Next

Complete these tasks:

- “How to Install a PCI Card” on page 109
- “How to Install the System Controller (SC) Card” on page 103
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18



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**Caution** – Do not reconnect the AC power cords to the back of the system until after you have installed the SC card.

---

---

# How to Remove the IDPROM Module

This section explains how to remove a functioning ID programmable read-only memory (IDPROM) module so that you can install it on a new PCI riser board, thereby preserving the system's host ID information. If you are replacing a defective IDPROM module and want to retain the same host ID, consult your authorized Sun sales representative or service provider for assistance with programming the new IDPROM module with the existing host ID and Ethernet address.

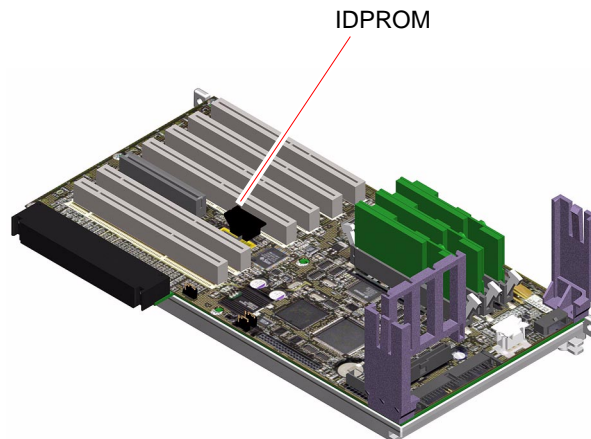
## Before You Begin

Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Avoid Electrostatic Discharge" on page 41
- "How to Remove the PCI Access Panel" on page 94
- "How to Remove Fan Tray 1" on page 97
- "How to Remove the System Controller (SC) Card" on page 101
- "How to Remove a PCI Card" on page 106
- "How to Remove the PCI Riser Board" on page 117

## What to Do

1. Locate the IDPROM module on the PCI riser board.



2. **Grasp the IDPROM module at each end and pull it straight up.**  
If necessary, gently rock the IDPROM module from side to side to facilitate removal.
3. **Place the IDPROM module on an antistatic mat.**

## What Next

Complete this task:

- “How to Install the IDPROM Module” on page 124

---

## How to Install the IDPROM Module

If you are installing a new IDPROM module, it must be programmed by an authorized Sun service representative before your system can resume normal operation. If you are installing a new PCI riser board, remember that you can migrate your former IDPROM module in order to preserve your system’s host ID and Ethernet address.

## Before You Begin

Complete this task:

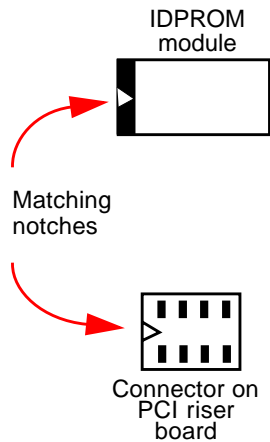
- “How to Remove the IDPROM Module” on page 123



# What to Do

## 1. Insert the IDPROM module into its socket on the PCI riser board.

Make sure that the notch on the IDPROM module is on the same side as the notch on the connector on the PCI riser board.



## 2. Push down firmly on the IDPROM module until it seats in its socket.

# What Next

Complete these tasks:

- “How to Install the PCI Riser Board” on page 120
- “How to Install a PCI Card” on page 109
- “How to Install the System Controller (SC) Card” on page 103
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18
- “How to Initiate a Reconfiguration Boot” on page 23



## Servicing Miscellaneous Components

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This chapter contains the following sections:

- "How to Remove the FC-AL Backplane" on page 128
- "How to Install the FC-AL Backplane" on page 130
- "How to Remove the Removable Media Assembly" on page 131
- "How to Install the Removable Media Assembly" on page 133
- "How to Remove the DVD-ROM Drive" on page 135
- "How to Install the DVD-ROM Drive" on page 136
- "How to Remove the Centerplane" on page 138
- "How to Install the Centerplane" on page 141
- "How to Remove the Power Distribution Board" on page 144
- "How to Install the Power Distribution Board" on page 147
- "How to Remove the Media Door Assembly" on page 150
- "How to Install the Media Door Assembly" on page 154

---

# How to Remove the FC-AL Backplane

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Remove a Disk Drive” on page 55
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove Fan Tray 1” on page 97

## What to Do

1. **Disconnect the Fibre Channel-Arbitrated Loop (FC-AL) power cable from J0201 on the FC-AL backplane.**

Press the tab to unlock the cable and pull the cable out of the connector.

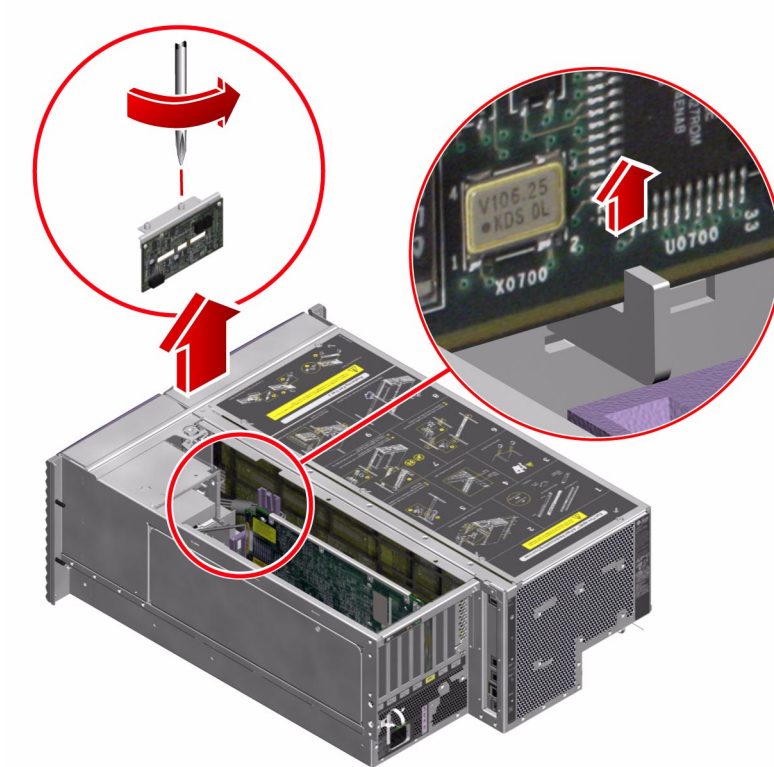
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**Note** – For cable routing information, see “Cable Connections and Routing” on page 160.

---

2. **Disconnect the FC-AL data cable from J0200 on the FC-AL backplane.**  
Push the ejector levers apart to eject the cable from its connector.
3. **Loosen the two Phillips No. 1 captive screws on the FC-AL backplane mounting bracket.**

4. Pull the FC-AL backplane straight up, off its mounting tabs.



5. Set the FC-AL backplane aside on an antistatic mat.

## What Next

Complete this task:

- “How to Install the FC-AL Backplane” on page 130

---

# How to Install the FC-AL Backplane

## Before You Begin

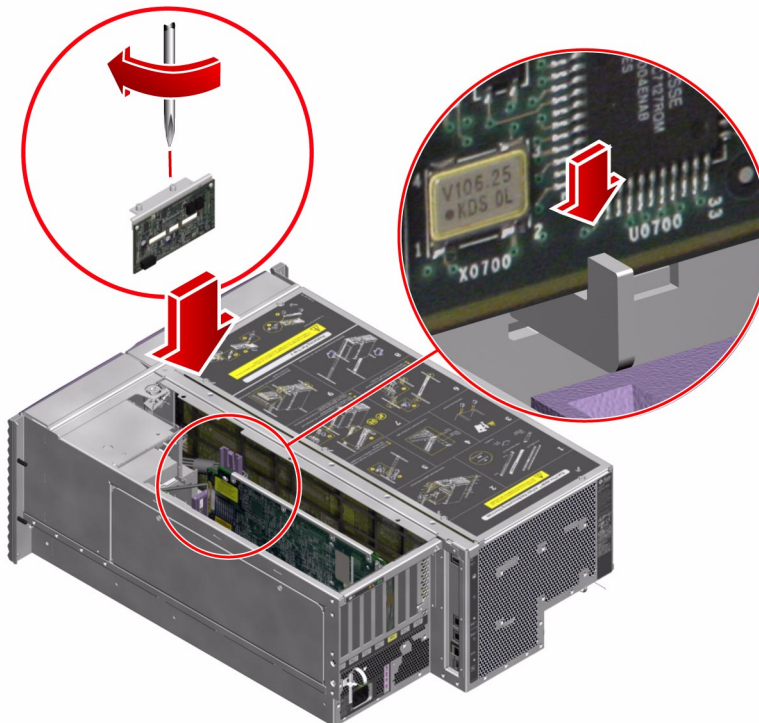
Complete this task:

- “How to Remove the FC-AL Backplane” on page 128

## What to Do

### 1. Attach the FC-AL backplane to its bracket on the chassis.

Push the FC-AL backplane straight down until it locks into place. Make sure that the slot in the FC-AL backplane and mounting bracket mate with the corresponding tabs on the chassis drive bay.



2. **Tighten the two Phillips No. 1 captive screws on the mounting bracket.**
3. **Connect the FC-AL power cable to the FC-AL backplane at J0201.**  
Push in the cable until it snaps into place.
4. **Connect the FC-AL data cable to the FC-AL backplane at J0200.**  
Push in the cable until the ejector levers snap into place.

## What Next

Complete these tasks:

- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Install a Disk Drive” on page 57
- “How to Power On the System” on page 18

---

# How to Remove the Removable Media Assembly

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove Fan Tray 1” on page 97

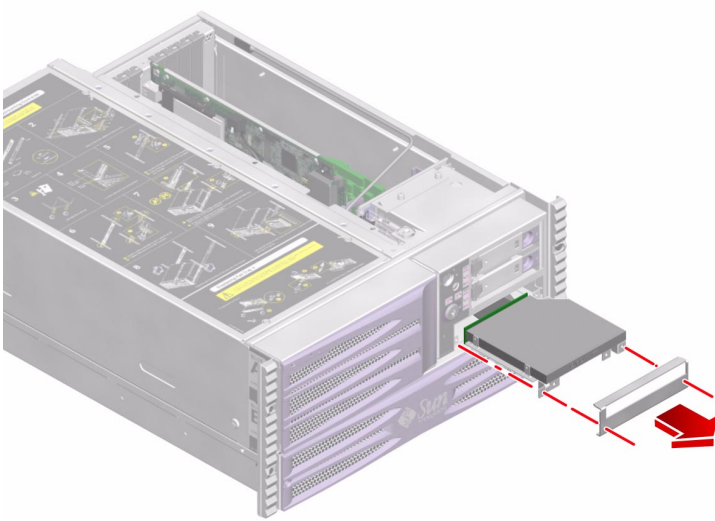
## What to Do

1. **Disconnect the removable media assembly (RMA) cable from J1001 on the PCI riser board.**  
Pull the ejector levers up until the cable unseats from its connector.

2. **Unlock and open the media door.**

3. **Remove the RMA faceplate.**

Remove the two Phillips No. 1 mounting screws and pull off the faceplate.



4. **Reach inside the system and push the RMA forward.**

Be careful not to damage the RMA cable.

5. **With your other hand, cradle the RMA from underneath and pull it out of the RMA bay.**

Thread the RMA and its cable out of the system through the RMA bay.

6. **Place the RMA on an antistatic mat.**

---

**Note** – If you are replacing a failed DVD-ROM drive, you must remove the DVD-ROM drive from the RMA bracket.

---

## What Next

If you are replacing a failed DVD-ROM drive or failed RMA cable, see:

- “How to Remove the Removable Media Assembly Cable” on page 167



Complete this task:

- “How to Install the Removable Media Assembly” on page 133

---

# How to Install the Removable Media Assembly

## Before You Begin

Complete this task:

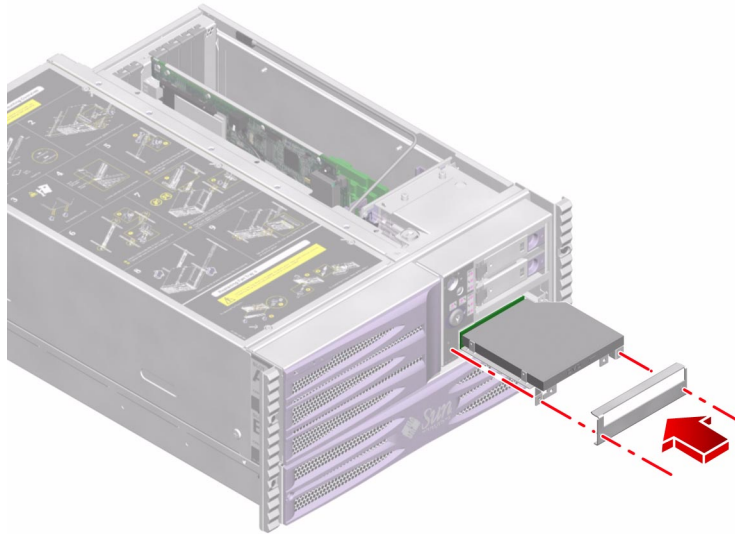
- “How to Remove the Removable Media Assembly” on page 131

## What to Do

1. Thread the removable media assembly (RMA) cable through the RMA bay.

**2. Insert the RMA partially into the RMA bay.**

Insert the sides of the RMA bracket into their corresponding rails in the chassis. Leave enough clearance to connect the RMA cable to the PCI riser board.



**3. Connect the RMA cable to J1001 on the PCI riser board.**

- a. Make sure that the two ejector levers on either side of the connector on the PCI riser board are rotated up.
- b. Push the cable back toward the rear of the system until the two ejector levers on the PCI riser board snap into place.

**4. Push the RMA all the way into the RMA bay and reattach the RMA faceplate.**

Replace the two Phillips No. 1 screws that secure the RMA faceplate to the chassis.

## What Next

Complete these tasks:

- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

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# How to Remove the DVD-ROM Drive

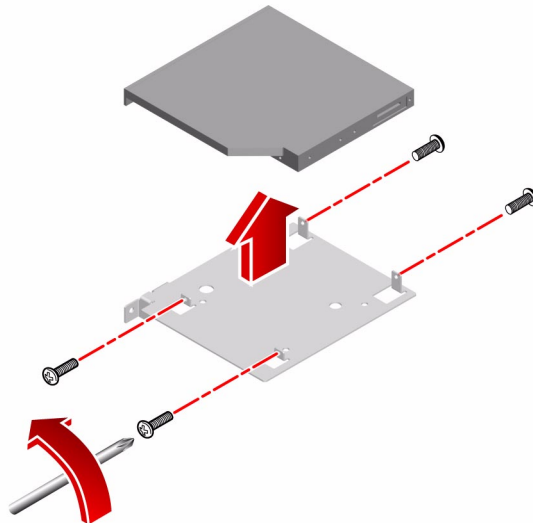
## Before You Begin

Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Remove the PCI Access Panel" on page 94
- "How to Avoid Electrostatic Discharge" on page 41
- "How to Remove Fan Tray 1" on page 97
- "How to Remove the Removable Media Assembly" on page 131
- "How to Remove the Removable Media Assembly Cable" on page 167

## What to Do

1. Using a Phillips No. 1 screwdriver, remove the four mounting screws securing the DVD-ROM drive to the removable media assembly (RMA) bracket.



2. Slide the DVD-ROM drive off the RMA bracket.

## What Next

Complete this task:

- “How to Install the DVD-ROM Drive” on page 136

---

## How to Install the DVD-ROM Drive

### Before You Begin

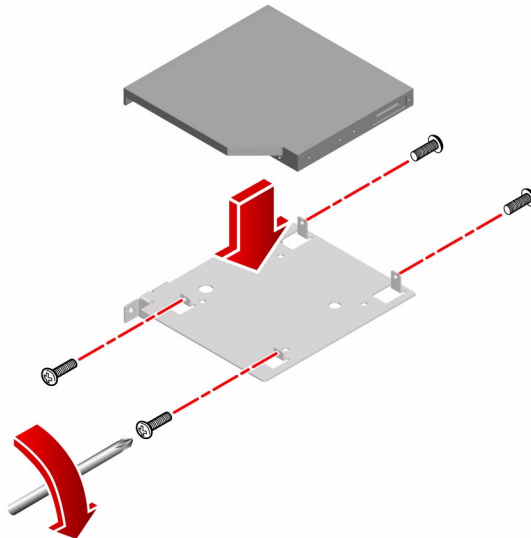
Complete this task:

- “How to Remove the DVD-ROM Drive” on page 135

### What to Do

1. Slide the DVD-ROM drive onto the removable media assembly (RMA) bracket.
2. Using a Phillips No. 1 screwdriver, attach the DVD-ROM drive to the RMA bracket.

The DVD-ROM drive is secured with four mounting screws.



# What Next

Complete these tasks:

- “How to Install the Removable Media Assembly Cable” on page 168
- “How to Install the Removable Media Assembly” on page 133
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

---

# How to Remove the Centerplane

It is mechanically feasible to service the centerplane with the system installed in the cabinet. However, it is easier to remove the system from the cabinet and perform this procedure on a workbench. To remove the system from the cabinet, see “How to Remove the System From the Cabinet” on page 33.

## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the PCI Access Panel” on page 94
- “How to Remove Fan Tray 1” on page 97
- “How to Remove the FC-AL Data Cable” on page 164
- “How to Remove the System Controller (SC) Card” on page 101
- “How to Remove a PCI Card” on page 106
- “How to Remove the PCI Riser Board” on page 117
- “How to Remove the CPU Access Panel” on page 72
- “How to Remove a CPU/Memory Board” on page 76

---

**Note** – You must remove all PCI cards and the SC card from the system before removing the PCI riser board.

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**Note** – If your system is equipped with two CPU/Memory boards, you must remove both of them from the system.

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**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

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## What to Do



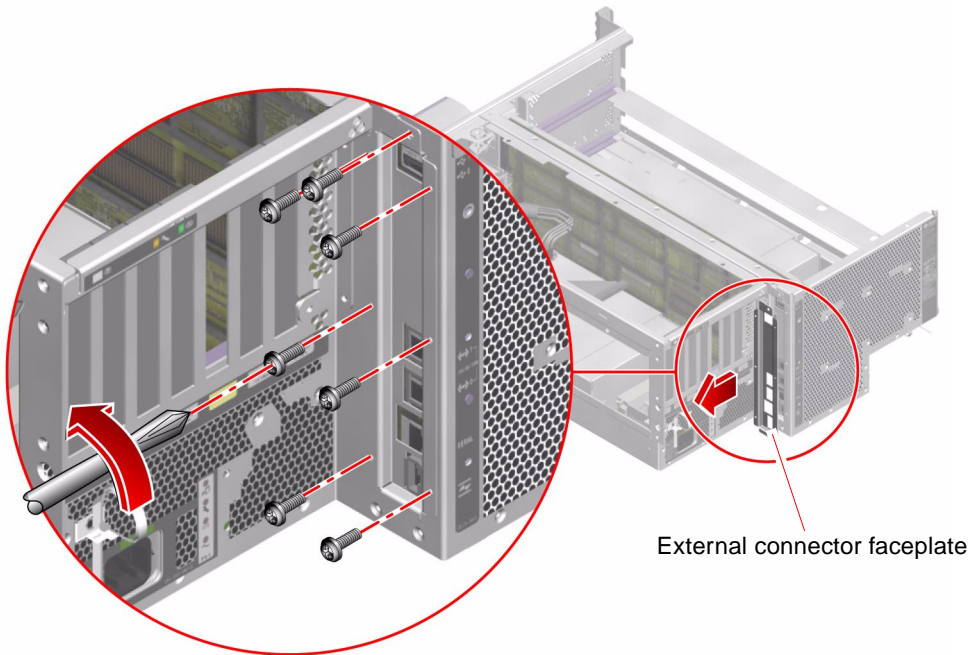
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**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

1. Disconnect the AC power cords from the back of the system.
2. Using a Phillips No. 2 screwdriver, remove the external connector faceplate on the back panel.

The faceplate is secured with seven screws.



3. Using a Phillips No. 2 screwdriver, remove the screw on the centerplane top stiffener closest to the front of the system.

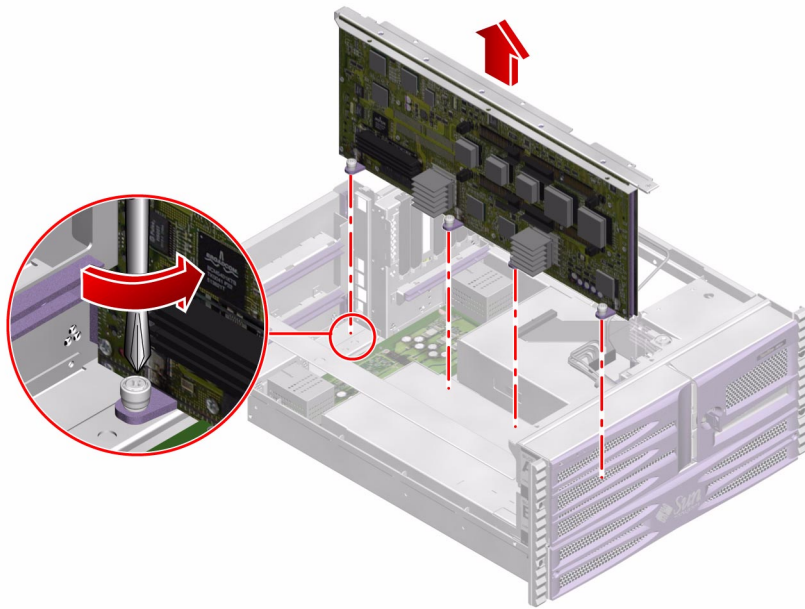


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**Caution** – Make sure that the PCI riser board and its components have been removed before proceeding. Trying to remove the centerplane before removing the PCI riser board can seriously damage both components.

---

4. Using a long-stem Phillips No. 2 screwdriver, loosen the four captive screws securing the centerplane to the bottom of the chassis.



5. Pull the centerplane straight up and out of the system and place the centerplane on an antistatic mat.

Be careful not to damage the connectors securing the centerplane to the power distribution board.

## What Next

Complete this task:

- “How to Install the Centerplane” on page 141



---

# How to Install the Centerplane

It is mechanically feasible to service the centerplane with the system installed in the cabinet. However, it is easier to remove the system from the cabinet and perform this procedure on a workbench. To remove the system from the cabinet, see “How to Remove the System From the Cabinet” on page 33.

## Before You Begin

Complete this task:

- “How to Remove the Centerplane” on page 138



---

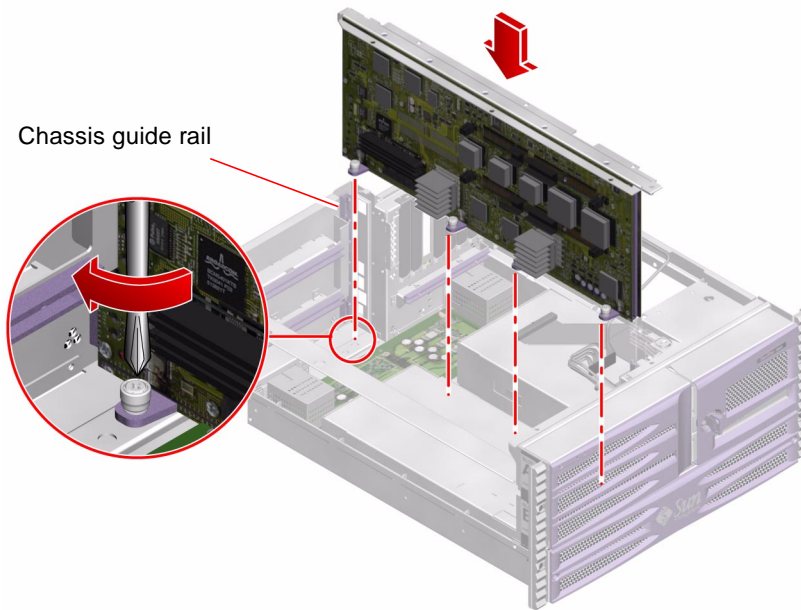
**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

## What to Do

1. **If you are replacing the centerplane with a new one, migrate the top stiffener to the new centerplane.**
  - a. **Remove the five remaining Phillips screws securing the top stiffener to the old centerplane.**
  - b. **Attach the top stiffener to the new centerplane using the five center Phillips screws.**

2. Slide the centerplane into its guide rails in the chassis.



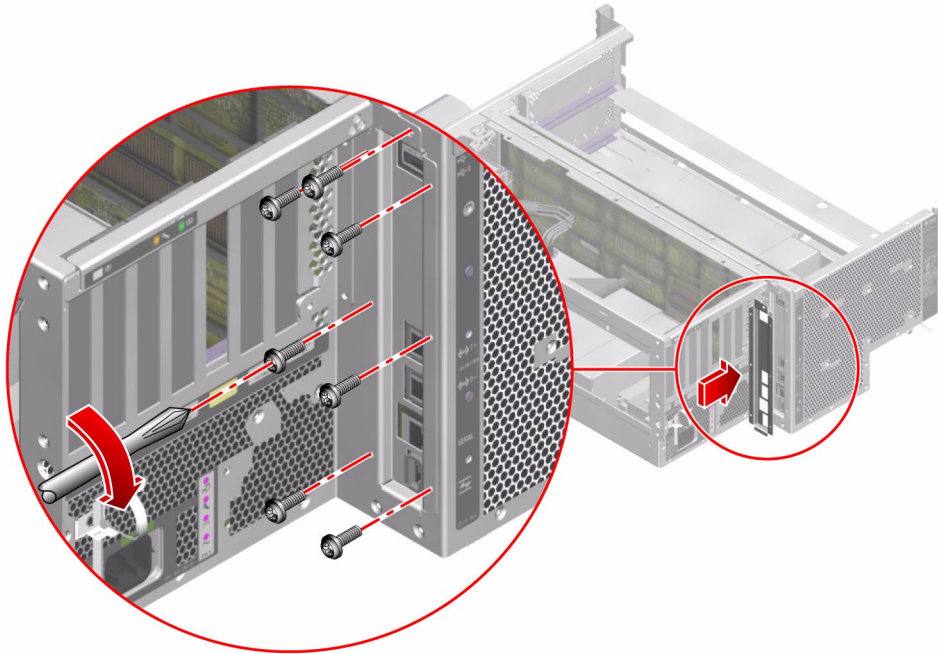
3. Press firmly and evenly to secure the centerplane connectors to the power distribution board.

Make sure that the rear lip on the centerplane top stiffener is on the outside of the chassis.

4. Using a long-stem Phillips No. 2 screwdriver, tighten the four captive screws that secure the centerplane to the chassis.
5. Using a Phillips No. 2 screwdriver, install the screw that secures the centerplane top stiffener to the front of the system.

6. Using a Phillips No. 2 screwdriver, install the external connector faceplate on the back panel.

The faceplate is fastened with seven Phillips screws.



7. Connect the AC power cords to the back of the system.

## What Next

Complete these tasks:

- "How to Install a CPU/Memory Board" on page 79
- "How to Install the CPU Access Panel" on page 74
- "How to Install the PCI Riser Board" on page 120
- "How to Install a PCI Card" on page 109
- "How to Install the System Controller (SC) Card" on page 103
- "How to Install the FC-AL Data Cable" on page 166
- "How to Install Fan Tray 1" on page 99
- "How to Install the PCI Access Panel" on page 96
- "How to Slide the System Into the Cabinet" on page 31
- "How to Power On the System" on page 18

---

# How to Remove the Power Distribution Board

It is mechanically feasible to service the power distribution board with the system installed in the cabinet. However, it is easier to remove the system from the cabinet and perform this procedure on a workbench. To remove the system from the cabinet, see "How to Remove the System From the Cabinet" on page 33.

## Before You Begin

Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25
- "How to Avoid Electrostatic Discharge" on page 41
- "How to Remove the Power Supply Access Panel" on page 46
- "How to Remove a Power Supply" on page 49
- "How to Remove the PCI Access Panel" on page 94
- "How to Remove Fan Tray 1" on page 97
- "How to Remove the FC-AL Data Cable" on page 164
- "How to Remove the System Controller (SC) Card" on page 101
- "How to Remove a PCI Card" on page 106
- "How to Remove the PCI Riser Board" on page 117
- "How to Remove the CPU Access Panel" on page 72
- "How to Remove a CPU/Memory Board" on page 76
- "How to Remove the Centerplane" on page 138

---

**Note** – You must remove both power supplies from the system.

---

---

**Note** – You must remove all PCI cards from the system.

---

---

**Note** – If your system is equipped with two CPU/Memory boards, you must remove both of them from the system.

---

---

**Note** – Use only the Sun Fire V490 200-240 VAC power distribution board in the Sun Fire V490 system.

---



---

**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

## What to Do



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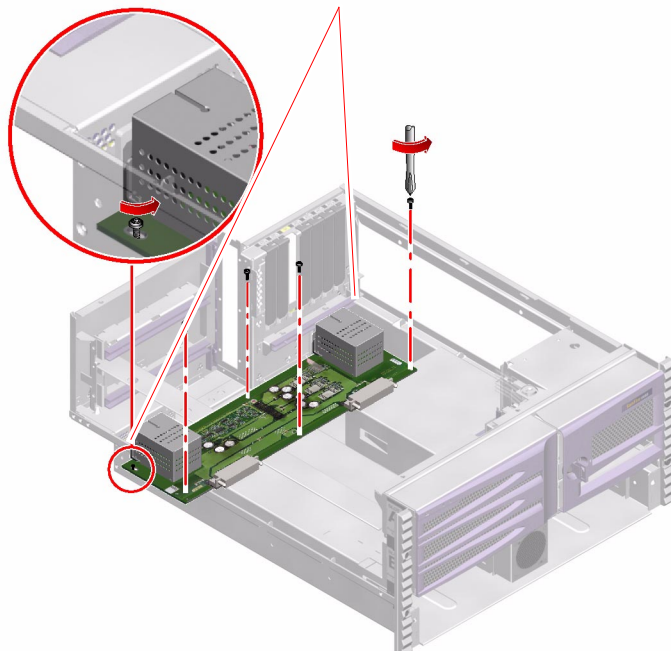
**Caution** – Disconnect the AC power cords from the back of the system before performing this procedure. Attempting to remove the power distribution board while the AC power cords are connected to a power source can result in serious personal injury.

---

1. **Disconnect the AC power cords from the back of the system.**
2. **Using a long-stem Phillips No. 2 screwdriver, loosen the two screws at the rear corners of the power distribution board.**

Insert the screwdriver through the rear hole in the chassis stiffener to get direct contact with the screw on the CPU-side of the system.

Loosen (do not remove) rear corner screws



---

**Note** – Do not remove the two rear corner screws.

---

3. Using a long-stem Phillips No. 2 screwdriver, remove the four remaining screws securing the power distribution board to the chassis.

Insert the screwdriver through the hole in the chassis stiffener to get direct contact with the screw on the CPU-side of the system.

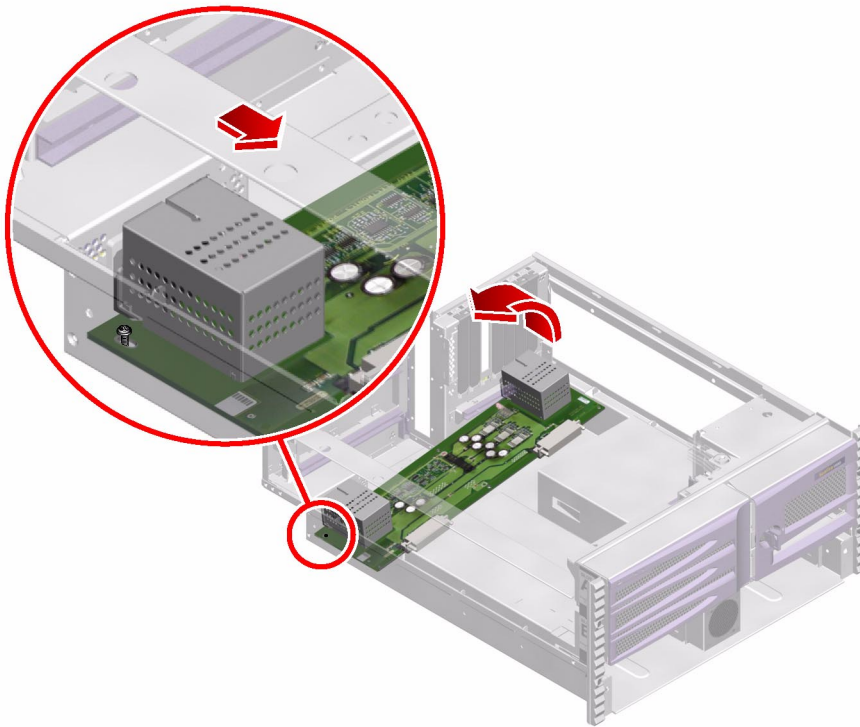
4. Remove the power distribution board from the system.
  - a. Slide the power distribution board toward the front of the system.
  - b. Tilt the power distribution board and remove it from the system through the PCI riser board access bay.



---

**Caution** – Be careful not to damage the light pipes mounted to the rear of the power distribution board.

---



5. Place the power distribution board on an antistatic mat.

## What Next

Complete this task:

- “How to Install the Power Distribution Board” on page 147

---

# How to Install the Power Distribution Board

It is mechanically feasible to service the power distribution board with the system installed in the cabinet. However, it is easier to remove the system from the cabinet and perform this procedure on a workbench. To remove the system from the cabinet, see “How to Remove the System From the Cabinet” on page 33.

## Before You Begin

Complete this task:

- “How to Remove the Power Distribution Board” on page 144

---

**Note** – Use only the Sun Fire V490 200-240 VAC power distribution board in the Sun Fire V490 system.

---



---

**Caution** – If you are using an antistatic wrist strap to protect against electrostatic discharge, connect it to a properly grounded surface, such as a nearby equipment rack, or a nearby system that is connected to a power source.

---

# What to Do

1. Place the power distribution board inside the chassis.

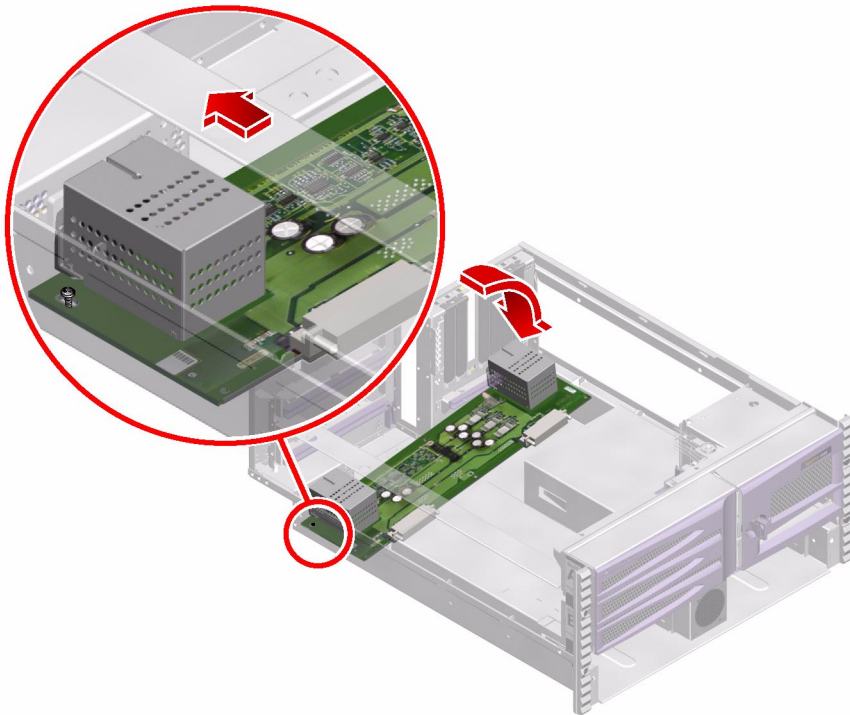


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**Caution** – Be careful not to damage the light pipes mounted to the rear of the power distribution board.

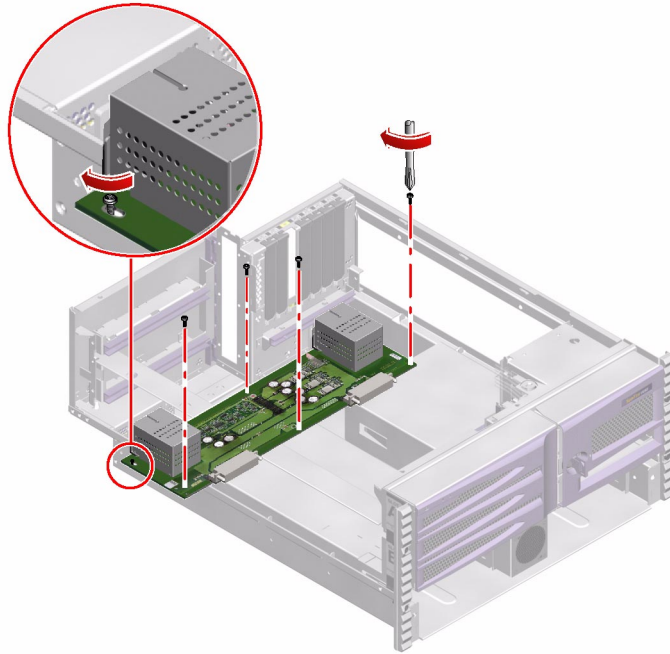
---

2. Slide the power distribution board back under the two rear corner screws.





3. Using a long-stem Phillips No. 2 screwdriver, replace the first four screws that secure the power distribution board to the chassis.  
Replace the left-front screw first, then replace the remaining screws.



4. Tighten the remaining two screws.

## What Next

Complete these tasks:

- “How to Install the Centerplane” on page 141
- “How to Install a CPU/Memory Board” on page 79
- “How to Install the CPU Access Panel” on page 74
- “How to Install the PCI Riser Board” on page 120
- “How to Install a PCI Card” on page 109
- “How to Install the System Controller (SC) Card” on page 103
- “How to Install the FC-AL Backplane” on page 130
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Install a Power Supply” on page 52
- “How to Install the Power Supply Access Panel” on page 48
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

---

## How to Remove the Media Door Assembly

### Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Remove the Power Supply Access Panel” on page 46
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove Fan Tray 1” on page 97
- “How to Remove the FC-AL Backplane” on page 128
- “How to Remove the Removable Media Assembly” on page 131

# What to Do

1. **Disconnect the system control switch/power button cable from J1401 on the PCI riser board.**

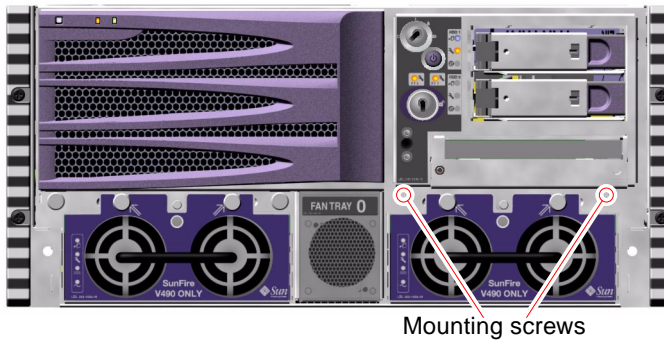
Pull the system control switch/power button cable end out from behind the centerplane-side Fan Tray 1 mounting bracket.

2. **Disconnect the Fan Tray 0 power cable from J2302 on the PCI riser board.**

Pull the cable out from behind the centerplane-side Fan Tray 1 mounting bracket.

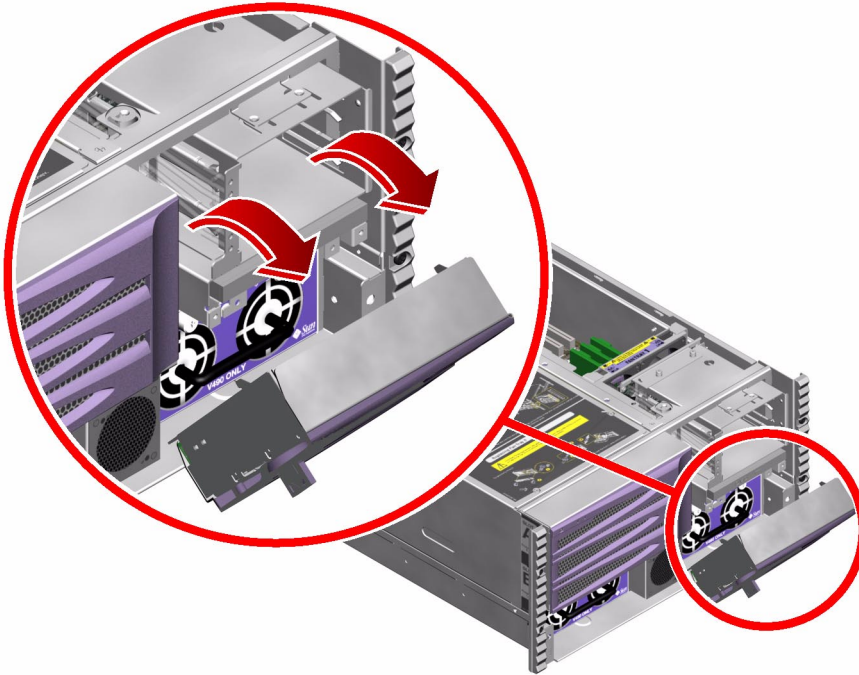
3. **Using a Phillips No. 1 screwdriver, remove the two screws securing the media door assembly to the chassis.**

The screws are located under the media door assembly.



4. Push the media door assembly up and pull it forward to unhook it from the chassis.

The two tabs secure the media door assembly to the chassis.



---

**Note** – You can slide Power Supply 1 halfway out of the chassis and use it to support the media door assembly while you complete the removal procedure.

---

5. Carefully tip the media door assembly forward.



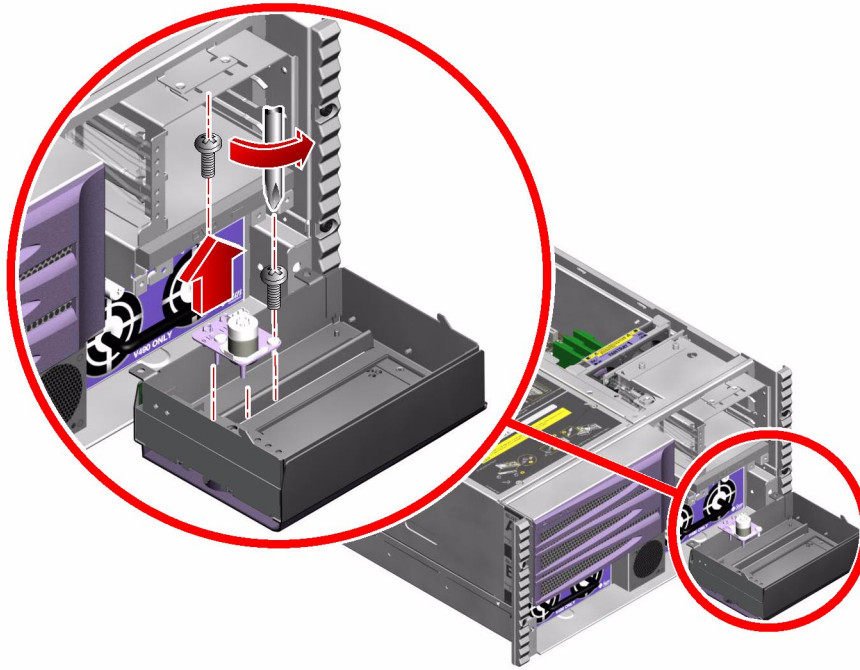
---

**Caution** – Do not drop the media door assembly. The system control switch/power button cable is attached to the media door assembly, and it can be damaged if the media door assembly is pulled too far away from the chassis.

---

6. Remove the system control switch/power button cable mounting plate from the media door assembly.

The mounting plate is secured with two Phillips No. 2 screws.



## What Next

Complete this task:

- “How to Install the Media Door Assembly” on page 154

---

# How to Install the Media Door Assembly

## Before You Begin

Complete this task:

- "How to Remove the Media Door Assembly" on page 150

## What to Do

1. **With one hand, cradle the media door assembly facedown in front of the drive bay.**

---

**Note** – You can slide Power Supply 1 halfway out of the chassis and use it to support the media door assembly while you complete the installation procedure.

---

2. **With your other hand, attach the system control switch/power button cable mounting plate to the media door assembly.**

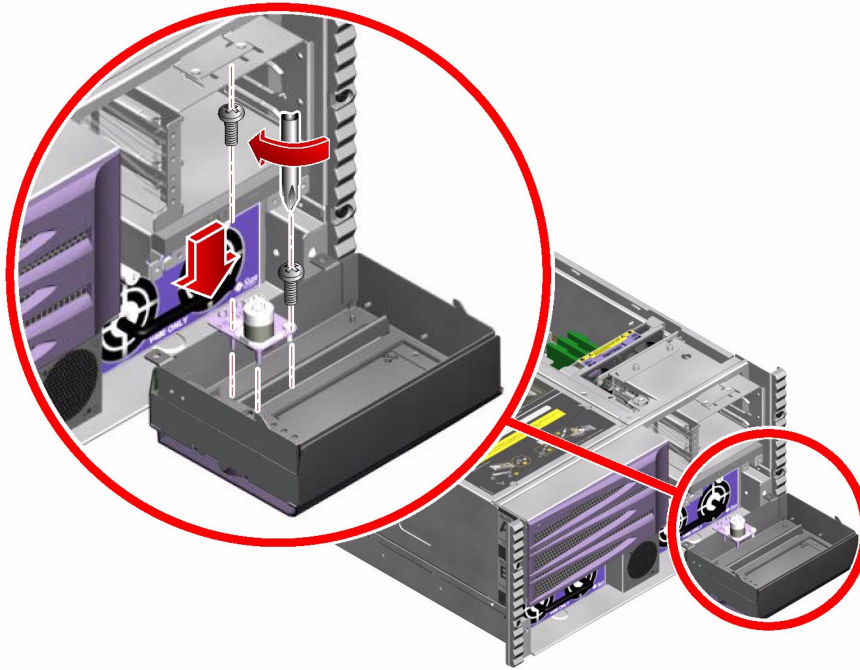
Secure the mounting plate with two Phillips No. 2 screws.



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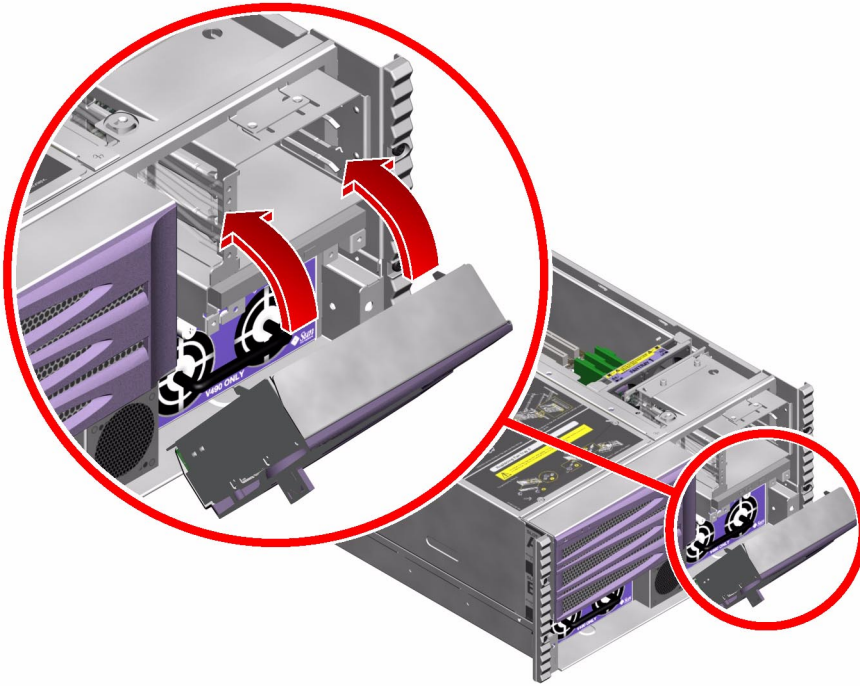
**Caution** – Do not drop the media door assembly. The system control switch/power button cable can be damaged if the media door assembly is pulled too far away from the chassis.

---



3. Insert the two tabs on the media door assembly frame into their corresponding slots on the front of the chassis.

Be sure that the system control switch/power button cable is routed cleanly back through the chassis, beside the drive bay.



4. Replace the two Phillips No. 1 screws that secure the media door assembly to the chassis.



Mounting screws



5. **Route the Fan Tray 0 cable behind the faceplate, and connect it to J2302 on the PCI riser board.**

Press the cable end into its socket until it snaps into place.

6. **Route the system control switch/power button cable behind the centerplane-side Fan Tray 1 bracket, and connect it to J1401 on the PCI riser board.**

Press the cable end into its socket until it snaps into place.

## What Next

Complete these tasks:

- “How to Install the Removable Media Assembly” on page 133
- “How to Install the FC-AL Backplane” on page 130
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Install the Power Supply Access Panel” on page 48
- “How to Slide the System Into the Cabinet” on page 31
- “How to Install a Disk Drive” on page 57
- “How to Power On the System” on page 18



## Servicing Cables

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This chapter contains the following sections:

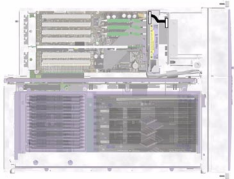
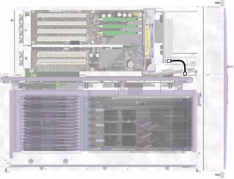
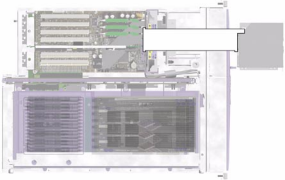
- “Cable Connections and Routing” on page 160
- “How to Remove the FC-AL Power Cable” on page 162
- “How to Install the FC-AL Power Cable” on page 163
- “How to Remove the FC-AL Data Cable” on page 164
- “How to Install the FC-AL Data Cable” on page 166
- “How to Remove the Removable Media Assembly Cable” on page 167
- “How to Install the Removable Media Assembly Cable” on page 168
- “How to Remove the System Control Switch/Power Button Cable” on page 170
- “How to Install the System Control Switch/Power Button Cable” on page 171
- “How to Remove the Back Panel LED Flex Circuit” on page 173
- “How to Install the Back Panel LED Flex Circuit” on page 175
- “How to Remove the Fan Tray 0 Cable” on page 176
- “How to Install the Fan Tray 0 Cable” on page 178

See Appendix D for board connector locations.

# Cable Connections and Routing

Use this table as a guide for connecting and routing system cables. Match cable ends (*P* numbers) with the corresponding board connectors (*J* numbers). Following sections describe how to remove and install these cables.

**TABLE 7-1** Cable Connections and Routing

Cable Name and Part Number	Routed From	Routed To	Cable Management Notes
FC-AL power cable (F530-3013)	FC-AL backplane at J0201 (P1)	PCI riser board at J1901 (P2)	Route under Fan Tray 1.
			
FC-AL data cable (F530-3069)	FC-AL backplane at J0200 (P1)	Centerplane at J6502 (P2)	Route above the system control switch/power button cable.
			
Removable media assembly (RMA) cable (F375-3053)	PCI riser board at J1001 (P1)	DVD-ROM drive (P2)	Connect the P2 cable end first; route under the drive bay; tuck any excess cable length under the PCI riser board before installing the RMA.
			

**TABLE 7-1** Cable Connections and Routing (Continued)

Cable Name and Part Number	Routed From	Routed To	Cable Management Notes
System control switch/power button cable (F540-5063)	PCI riser board at J1401 (P1)	Media door	Route between the drive bay and the centerplane; attach the P2 cable end (using the system control switch/power button mounting plate) before connecting the P1 cable end.
		Back panel LED flex circuit connector (P2)	Route along the top edge of the chassis; use cable management clips.
Back panel LED flex circuit (F370-4388)	N/A	System control switch/power button cable	Route flex circuit through its slot in the chassis back panel.
Fan Tray 0 cable (F540-5064)	PCI riser board at J2302 (P1)	Chassis front panel (P2)	Route between the drive cage and the centerplane, using the cable tie on the side of the drive cage. Push the P2 cable end through its hole in the chassis front panel.
FC-AL Loop B cables (F530-3018)	FC-AL backplane at J0202 ("From Disks")	Sun StorEdge PCI Dual Fibre-Channel Host Adapter at J4 (RX)	Route above Fan Tray 1 and other PCI cards.
	FC-AL backplane at J0203 ("To Disks")	Sun StorEdge PCI Dual Fibre-Channel Host Adapter at J3 (TX)	

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# How to Remove the FC-AL Power Cable

## Before You Begin

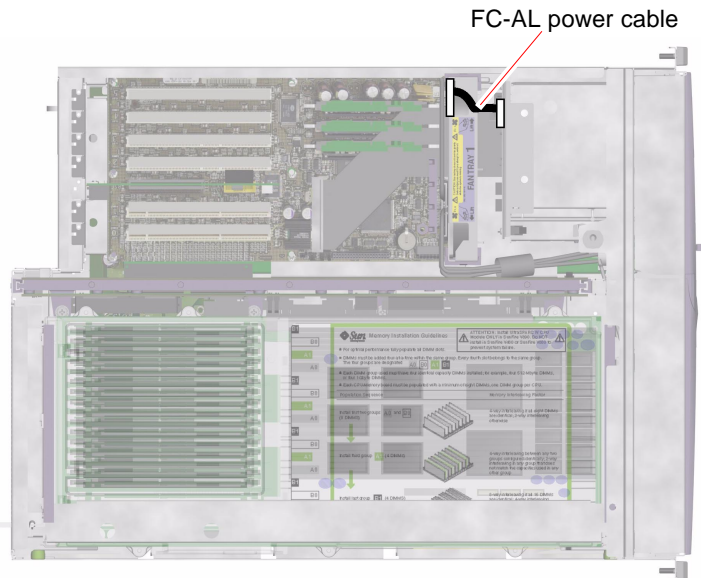
Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the PCI Access Panel” on page 94
- “How to Remove Fan Tray 1” on page 97

## What to Do

1. **Disconnect the FC-AL power cable end at J0201 on the FC-AL backplane.**

Press the locking tab on the cable end and pull it off its connector.



- 2. Disconnect the FC-AL power cable end at J1901 on the PCI riser board.**  
Press the locking tab on the cable end and pull it off its connector.

## What Next

Complete this task:

- “How to Install the FC-AL Power Cable” on page 163

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# How to Install the FC-AL Power Cable

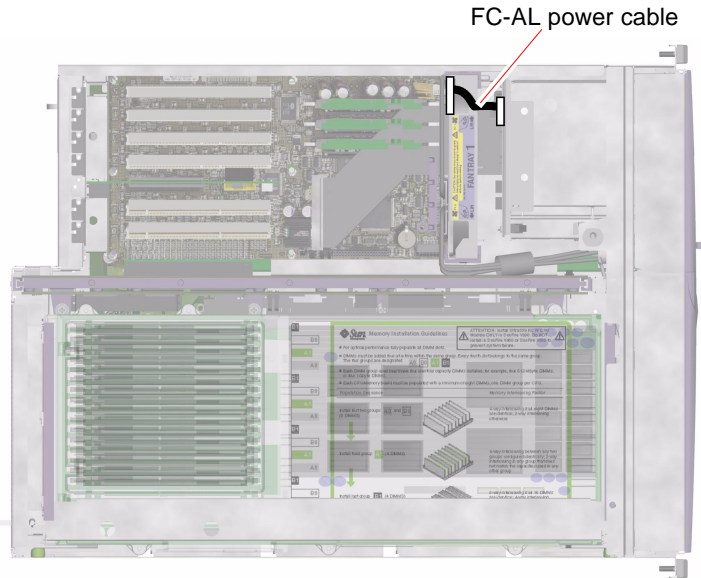
## Before You Begin

Complete this task:

- “How to Remove the FC-AL Power Cable” on page 162

## What to Do

- 1. Connect the FC-AL power cable at J1901 on the PCI riser board.**  
Push the cable end into its connector until the tab locks into place.



2. **Connect the FC-AL power cable at J0201 on the FC-AL backplane.**  
Push the cable end into its connector until the tab locks into place.

## What Next

Complete these tasks:

- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

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## How to Remove the FC-AL Data Cable

### Before You Begin

Complete these tasks:

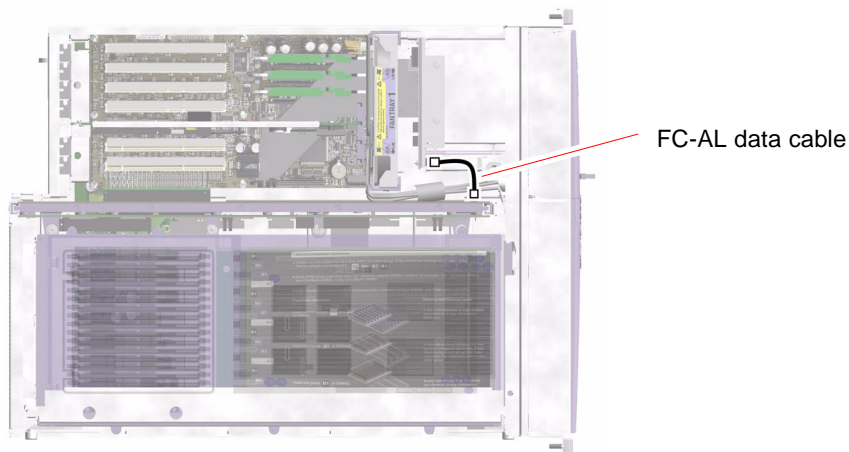


- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the PCI Access Panel” on page 94

## What to Do

1. **Disconnect the FC-AL data cable end at J6502 on the centerplane.**

Rotate the ejector levers outward to disconnect the cable end.



2. **Disconnect the FC-AL data cable end at J0200 on the FC-AL backplane.**

Rotate the ejector levers outward to disconnect the cable end.

## What Next

Complete this task:

- “How to Install the FC-AL Data Cable” on page 166

---

# How to Install the FC-AL Data Cable

## Before You Begin

Complete this task:

- “How to Remove the FC-AL Data Cable” on page 164

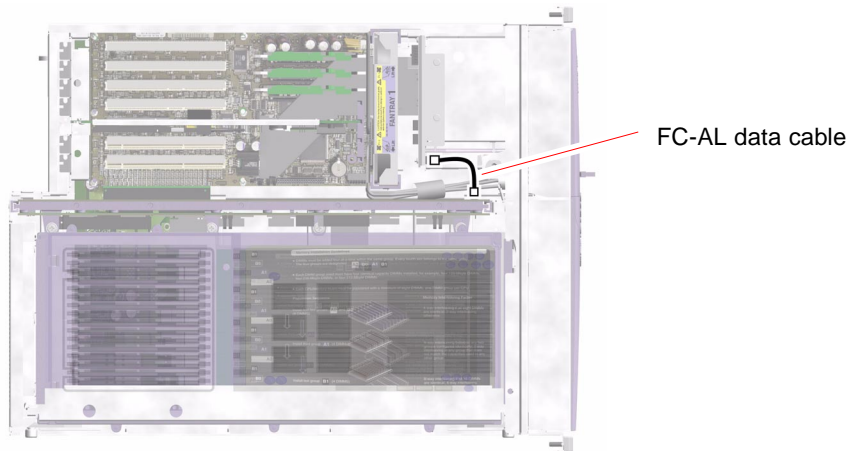
## What to Do

1. **Make sure that the ejector levers at J0200 on the FC-AL backplane are rotated outward.**

Push the cable end into its connector until the ejector levers snap into place.

2. **Connect the P1 cable end to J0200 on the FC-AL backplane.**

Push the cable end into its connector until the ejector levers snap into place.



3. **Connect the P2 cable end to J6502 on the centerplane.**

## What Next

Complete these tasks:

- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

---

# How to Remove the Removable Media Assembly Cable

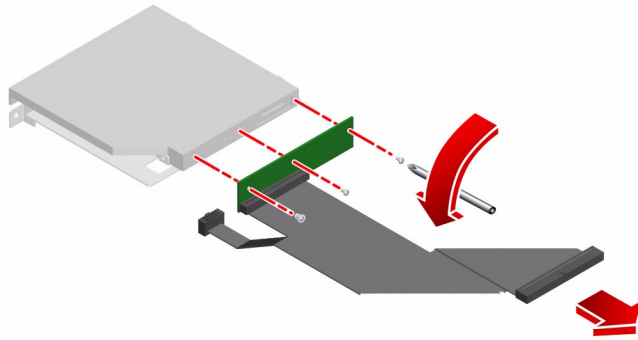
## Before You Begin

Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the PCI Access Panel” on page 94
- “How to Remove Fan Tray 1” on page 97
- “How to Remove the Removable Media Assembly” on page 131

## What to Do

1. Using a Phillips No. 1 screwdriver, remove the three screws securing the removable media assembly (RMA) cable end to the DVD-ROM drive.



2. Disconnect the RMA cable end from its connector on the DVD-ROM drive.

## What Next

Complete this task:

- “How to Install the Removable Media Assembly Cable” on page 168

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# How to Install the Removable Media Assembly Cable

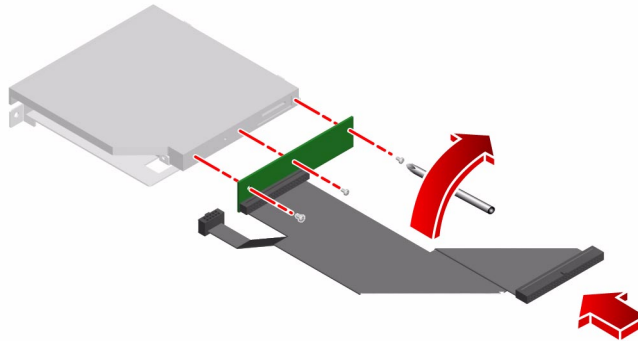
## Before You Begin

Complete this task:

- “How to Remove the Removable Media Assembly Cable” on page 167

## What to Do

1. Connect the removable media assembly (RMA) cable end to its corresponding connector on the DVD-ROM drive.



2. Using a Phillips No. 1 screwdriver, attach the three screws that secure the RMA cable to the DVD-ROM drive.

## What Next

Complete these tasks:

- “How to Install the Removable Media Assembly” on page 133
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18

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# How to Remove the System Control Switch/Power Button Cable

## Before You Begin

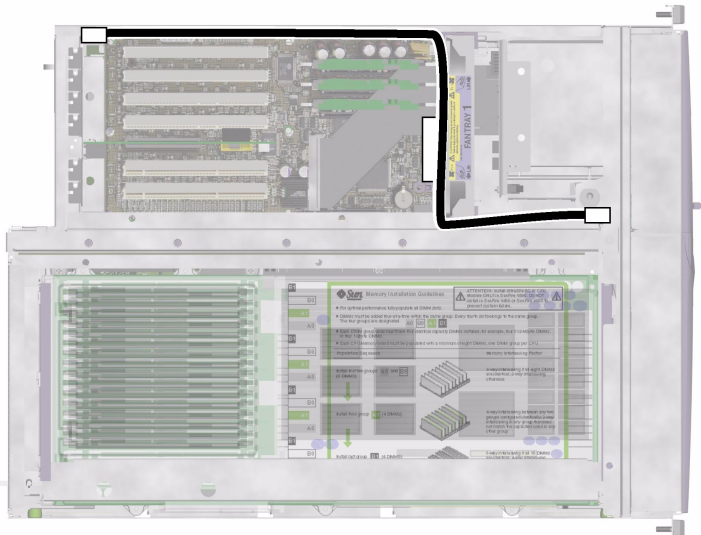
Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the Power Supply Access Panel” on page 46
- “How to Remove the PCI Access Panel” on page 94
- “How to Remove Fan Tray 1” on page 97
- “How to Remove the Removable Media Assembly” on page 131
- “How to Remove the Media Door Assembly” on page 150

## What to Do

1. **Disconnect the P3 cable end from the back panel flex-circuit cable.**

Press the tab to unlock the cable end. Unhook the cable from its clips on the chassis.



2. Remove the cable from the cable tie on the side of the drive bay.
3. Pull the cable up and out of the chassis.

## What Next

Complete this task:

- “How to Install the System Control Switch/Power Button Cable” on page 171

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# How to Install the System Control Switch/Power Button Cable

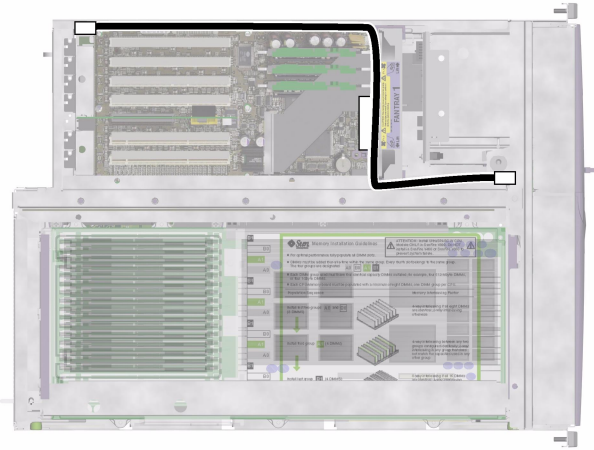
## Before You Begin

Complete this task:

- “How to Remove the System Control Switch/Power Button Cable” on page 170

## What to Do

1. Route the system control switch/power button cable through to the front of the system, between the centerplane and the drive bay.



2. **Attach the cable to the cable tie on the side of the drive bay.**
3. **Route the P3 cable end along the top edge of the chassis and connect the cable to its clips on the chassis.**
4. **Connect the back panel flex-circuit cable end to the P3 cable end on the system control switch/power button cable.**

## What Next

Complete these tasks:

- “How to Install the Media Door Assembly” on page 154
- “How to Install the Removable Media Assembly” on page 133
- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Install the Power Supply Access Panel” on page 48
- “How to Install the System Into the Cabinet” on page 36
- “How to Power On the System” on page 18



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# How to Remove the Back Panel LED Flex Circuit

## Before You Begin

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**Note** – If you remove the back panel LED flex circuit, you must replace it with a new one.

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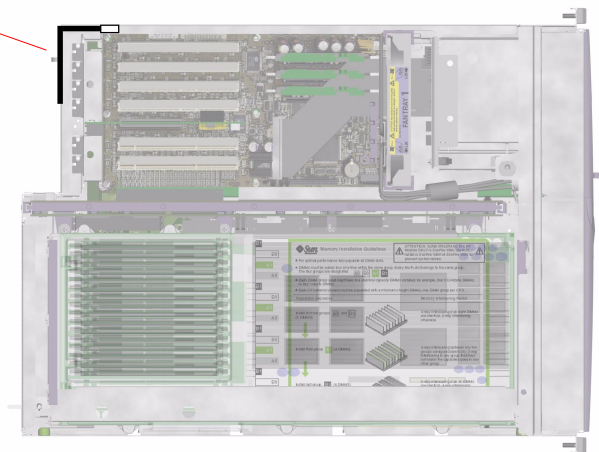
Complete these tasks:

- “How to Power Off the System” on page 22
- “How to Slide the System Out of the Cabinet” on page 25
- “How to Remove the PCI Access Panel” on page 94

## What to Do

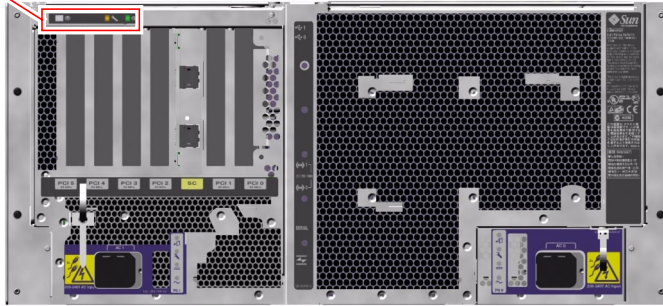
1. Disconnect the P2 cable end on the system control switch cable from the back panel LED flex circuit.

Back panel LED flex circuit



2. Peel off the flex-circuit cable end from the inside of the chassis.
3. Peel off the back panel LED flex circuit from the back panel.

Back panel LED flex circuit



## What Next

- “How to Install the Back Panel LED Flex Circuit” on page 175

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# How to Install the Back Panel LED Flex Circuit

## Before You Begin

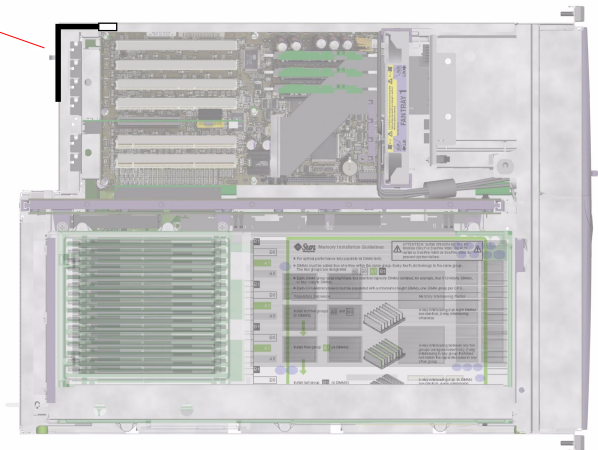
Complete this task:

- “How to Remove the Back Panel LED Flex Circuit” on page 173

## What to Do

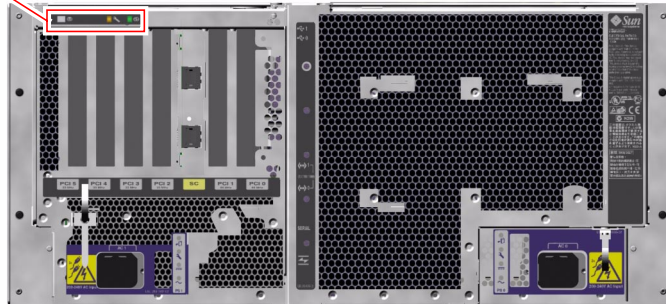
1. Peel off the backing paper from the new back panel LED flex circuit.
2. Slide the flex circuit down into its slot in the back panel.

Back panel LED flex circuit



3. Press the back panel LED flex circuit onto the back panel.  
Be sure the back panel slot is covered with the LED assembly.

Back panel LED flex circuit



4. Peel off the backing paper from the flex-circuit cable end and press it onto the inside of the chassis.
5. Connect the P2 cable end of the system control switch to the flex-circuit cable end.

## What Next

Complete these tasks:

- "How to Install the PCI Access Panel" on page 96
- "How to Slide the System Into the Cabinet" on page 31
- "How to Power On the System" on page 18

---

## How to Remove the Fan Tray 0 Cable

### Before You Begin

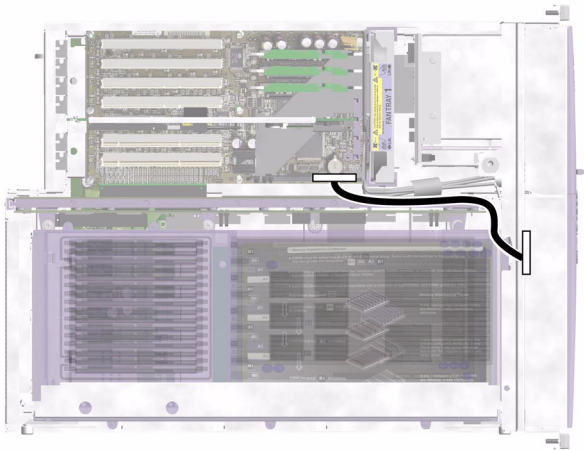
Complete these tasks:

- "How to Power Off the System" on page 22
- "How to Slide the System Out of the Cabinet" on page 25

- “How to Avoid Electrostatic Discharge” on page 41
- “How to Remove the Power Supply Access Panel” on page 46
- “How to Remove Fan Tray 0” on page 65
- “How to Remove the PCI Access Panel” on page 94
- “How to Remove Fan Tray 1” on page 97

## What to Do

1. **Disconnect the Fan Tray 0 cable end at J2302 on the PCI riser board.**



2. **Remove the cable from the cable tie on the side of the drive bay.**
3. **Using a Phillips No. 2 screwdriver, remove the Fan Tray 0 cable mounting bracket from the front of the chassis.**
4. **Pull the cable out through its hole in the front of the chassis.**

---

**Note** – While removing the cable, be careful not to bind the Fan Tray 0 cable end on the system control switch/power button cable.

---

## What Next

Complete this task:

- “How to Install the Fan Tray 0 Cable” on page 178

---

# How to Install the Fan Tray 0 Cable

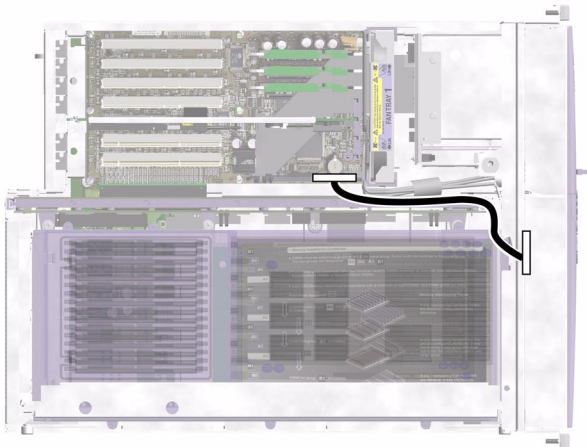
## Before You Begin

Complete this task:

- "How to Remove the Fan Tray 0 Cable" on page 176

## What to Do

1. Push the P1 cable end through its hole in the front of the chassis.



2. Route the cable end between the centerplane and the drive bay.  
Attach the cable to the cable tie on the side of the disk cage.
3. Connect the P1 cable end to J2302 on the PCI riser board.
4. Using a Phillips No. 2 screwdriver, attach the Fan Tray 0 cable mounting bracket to the front of the chassis.

# What Next

Complete these tasks:

- “How to Install Fan Tray 1” on page 99
- “How to Install the PCI Access Panel” on page 96
- “How to Install Fan Tray 0” on page 68
- “How to Install the Power Supply Access Panel” on page 48
- “How to Slide the System Into the Cabinet” on page 31
- “How to Power On the System” on page 18





## 2-Post Rack Service Requirements

---

This appendix describes service requirements for systems installed in a 2-post rack. It contains the following sections:

- “Servicing a System Installed in a 2-Post Rack” on page 182
- “How to Remove the System From an Empty 2-Post Rack” on page 183
- “How to Install the System Into an Empty 2-Post Rack” on page 185
- “How to Remove the System From a Populated 2-Post Rack” on page 187
- “How to Install the System Into a Populated 2-Post Rack” on page 190

---

**Note** – If you are performing a first-time installation, see the documentation supplied with the 2-post rackmounting kit.

---

---

# Servicing a System Installed in a 2-Post Rack

If your system is installed in a 2-post rack, you must remove it from the rack before servicing the following internal components:

- CPU, memory, and related components—See Chapter 4:
  - CPU access panel
  - CPU/Memory boards
  - Memory modules
- I/O components—See Chapter 5:
  - PCI access panel
  - Fan Tray 1 (PCI fan tray)
  - SC card
  - PCI cards
  - DC/DC converters
  - IDPROM
  - PCI riser board
- Miscellaneous components—See Chapter 6:
  - FC-AL backplane
  - Removable media assembly (RMA)
  - Centerplane
  - Power distribution board
- Cables—See Chapter 7:
  - FC-AL power cable
  - FC-AL data cable
  - RMA data cable
  - System control switch/power button cable

---

# How to Remove the System From an Empty 2-Post Rack

## Before You Begin

Complete this task:

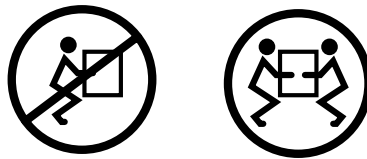
- “How to Power Off the System” on page 22



---

**Caution** – The chassis is heavy. Two persons are required to remove the system from the rack in the following procedure.

---



## What to Do

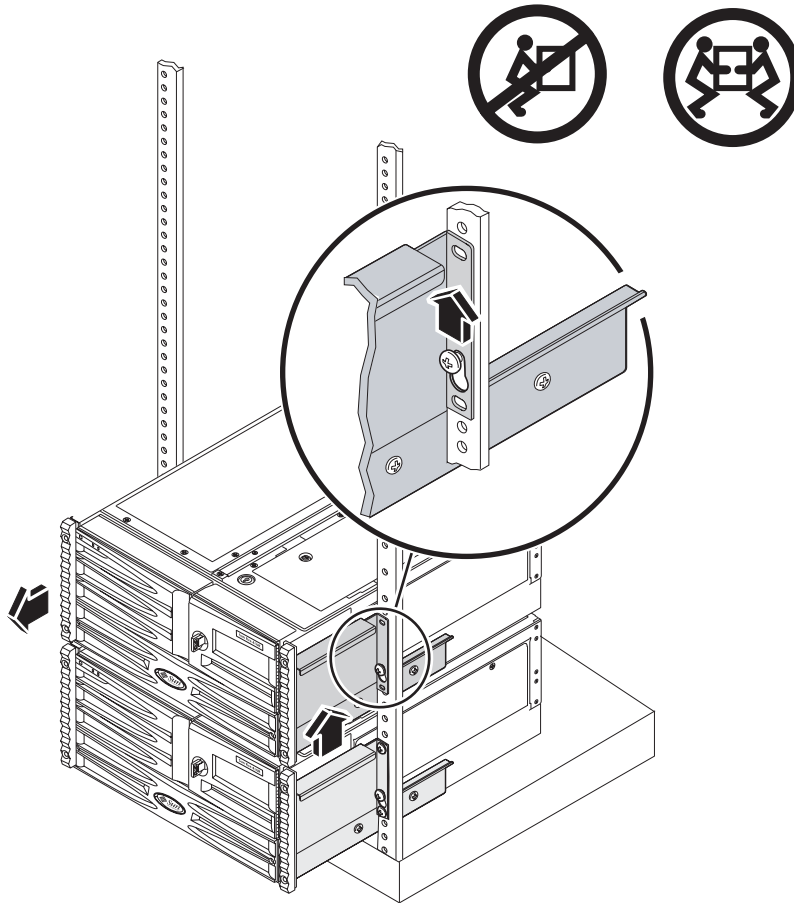
1. **Disconnect all external cables attached to the back panel of the system.**
2. **Using a Phillips No. 2 screwdriver, loosen the middle mounting screw on the left and the right vertical mounting rails.**

Do not fully remove the mounting screws. Leave a 0.25-inch (0.64-cm) gap between the head of each screw and the mounting bracket.

3. **Remove the top and bottom screws from the left and the right vertical mounting rails.**

Do not remove the middle mounting screws; they support the server.

4. Lift the server up and over the mounting screw on each side of the vertical mounting rails so that the large hole clears the head of the screw.



5. Pull the server out of the rack.

## What Next

Complete this task:

- “How to Install the System Into an Empty 2-Post Rack” on page 185

---

# How to Install the System Into an Empty 2-Post Rack

## Before You Begin

Complete the following task:

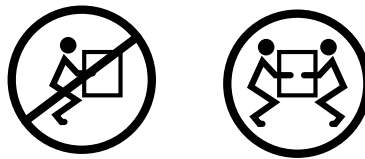
- “How to Remove the System From an Empty 2-Post Rack” on page 183



---

**Caution** – The chassis is heavy. Two persons are required to install the system into the rack in the following procedure.

---

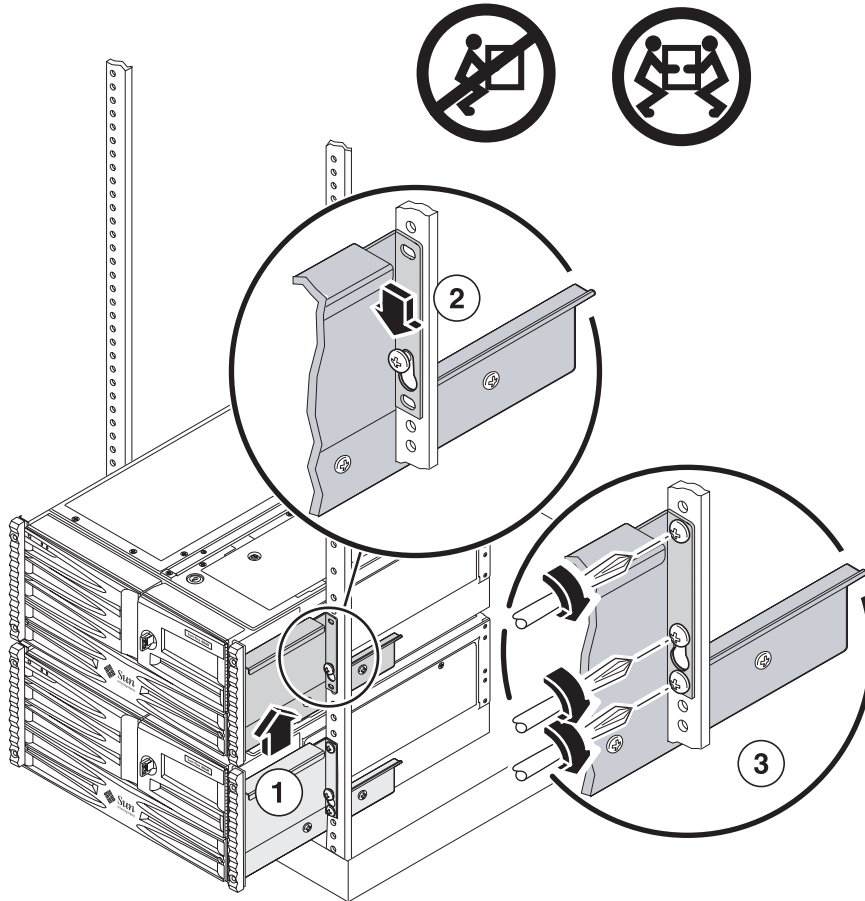


## What to Do

1. Lift the server up and over the mounting screw on each side of the vertical mounting rails so that the large hole clears the head of the screw.
2. Slide the server down so that the server rests on the mounting screws.

3. Using a Phillips No. 2 screwdriver, secure the top and bottom screws to the left and the right vertical mounting rails.

Use M5 screws for a Metric rack and 10-32 screws for an English rack.



4. Connect all external cables that were attached to the back panel of the system.

Examine each disconnected cable for information indicating the cable's origin and its terminating connection.

## What Next

Complete this task:

- “How to Power On the System” on page 18

If you have added or removed a PCI card, CPU/Memory board, or DIMMs, complete this task:

- “How to Initiate a Reconfiguration Boot” on page 23

---

# How to Remove the System From a Populated 2-Post Rack

## Before You Begin

Complete the following task:

- “How to Power Off the System” on page 22



---

**Caution** – The chassis is heavy. Two persons are required to remove the system from the rack in the following procedure.

---



## What to Do

1. **Disconnect all external cables attached to the back panel of the system.**
2. **Using a Phillips No. 2 screwdriver, remove the top and bottom screws from the left and the right vertical mounting rails.**



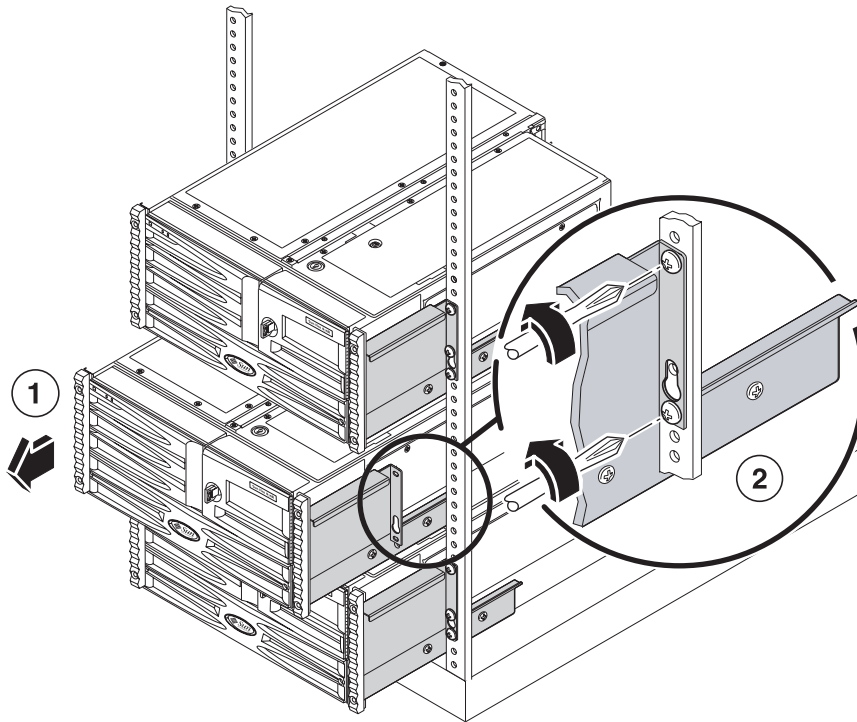
---

**Caution** – When removing the server from a populated 2-post rack, be sure to support the weight of the server, so you do not damage the component installed below it in the rack.

---



3. Slide the server out of the rack.



## What Next

Complete this task:

- “How to Install the System Into a Populated 2-Post Rack” on page 190

---

# How to Install the System Into a Populated 2-Post Rack

## Before You Begin

Complete the following task:

- “How to Remove the System From a Populated 2-Post Rack” on page 187



---

**Caution** – The chassis is heavy. Two persons are required to install the system into the rack in the following procedure.

---

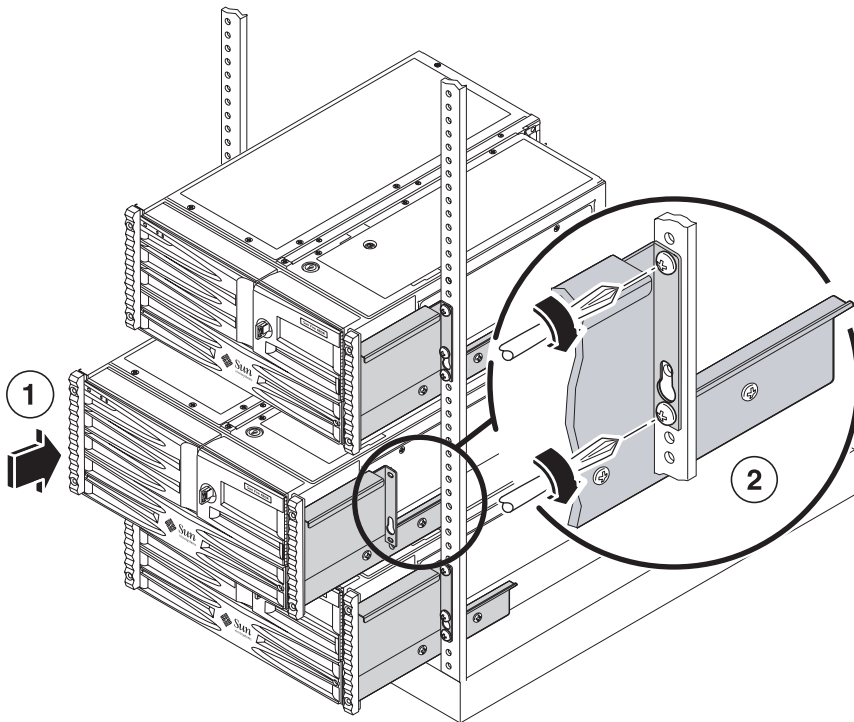


## What to Do

1. Slide the server into the open position in the rack.

2. Using a Phillips No. 2 screwdriver, secure the top and bottom screws to the left and the right vertical mounting rails.

Use M5 screws for a Metric rack and 10-32 screws for an English rack.



## What Next

Complete this task:

- “How to Power On the System” on page 18

If you have added or removed a PCI card, CPU/Memory board, or DIMMs, complete this task:

- “How to Initiate a Reconfiguration Boot” on page 23

## Connector Pinouts

---

This appendix gives you reference information about the system's back panel ports and pin assignments.

Topics covered in this appendix include:

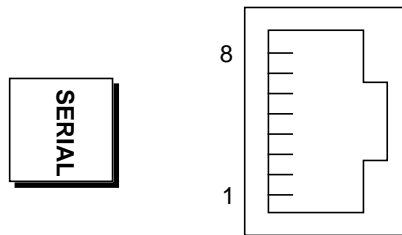
- "Serial Port Connector" on page 194
- "USB Connector" on page 195
- "Twisted-Pair Ethernet Connector" on page 196
- "SC Ethernet Connector" on page 197
- "SC Serial Connector" on page 198
- "FC-AL Port HSSDC Connector" on page 199

---

# Serial Port Connector

The serial port connector is an RJ-45 connector that can be accessed from the back panel.

## Serial Port Connector Diagram



## Serial Port Connector Signals

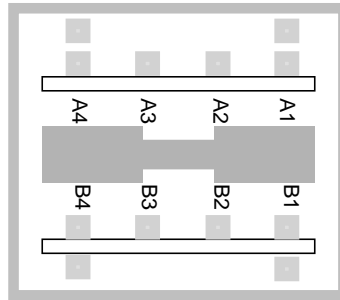
Pin	Signal Description	Pin	Signal Description
1	Request To Send	5	Ground
2	Data Terminal Ready	6	Receive Data
3	Transmit Data	7	Data Set Ready
4	Ground	8	Clear To Send

---

# USB Connector

Two Universal Serial Bus (USB) connectors are located on the centerplane and can be accessed from the back panel.

## USB Connector Diagram



## USB Connector Signals

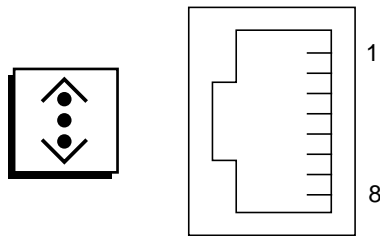
Pin	Signal Description	Pin	Signal Description
A1	+5 VDC	B1	+5 VDC
A2	Port Data0 -	B2	Port Data1 -
A3	Port Data0 +	B3	Port Data1 +
A4	Ground	B4	Ground

---

# Twisted-Pair Ethernet Connector

The twisted-pair Ethernet (TPE) connector is an RJ-45 connector located on the system centerplane and can be accessed from the back panel. The Ethernet interface operates at 10 Mbps, 100 Mbps, and 1000 Mbps.

## TPE Connector Diagram



## TPE Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Transmit/Receive Data0 +	5	Transmit/Receive Data2 -
2	Transmit/Receive Data0 -	6	Transmit/Receive Data1 -
3	Transmit/Receive Data1 +	7	Transmit/Receive Data3 +
4	Transmit/Receive Data2 +	8	Transmit/Receive Data3 -

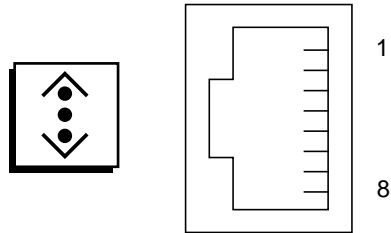


---

# SC Ethernet Connector

The system controller (SC) Ethernet connector is an RJ-45 connector located on the SC card and can be accessed from the back panel.

## SC Ethernet Connector Diagram



## SC Ethernet Connector Signals

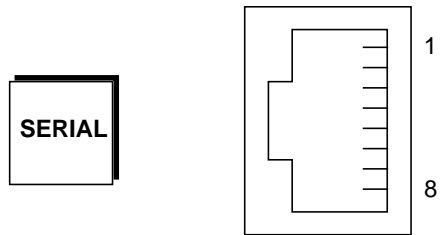
Pin	Signal Description	Pin	Signal Description
1	Transmit/Receive Data0 +	5	Transmit/Receive Data2 -
2	Transmit/Receive Data0 -	6	Transmit/Receive Data1 -
3	Transmit/Receive Data1 +	7	Transmit/Receive Data3 +
4	Transmit/Receive Data2 +	8	Transmit/Receive Data3 -

---

# SC Serial Connector

The system controller (SC) serial connector is an RJ-45 connector located on the SC card and can be accessed from the back panel.

## SC Serial Connector Diagram



## SC Serial Connector Signals

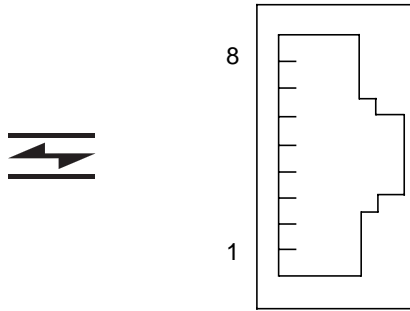
Pin	Signal Description	Pin	Signal Description
1	Request To Send	5	Ground
2	Data Terminal Ready	6	Receive Data
3	Transmit Data	7	Data Set Ready
4	Ground	8	Clear To Send

---

# FC-AL Port HSSDC Connector

The Fibre Channel-Arbitrated Loop port high-speed serial data connector (HSSDC) is located on the centerplane and can be accessed from the back panel.

## HSSDC Connector Diagram



## HSSDC Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Differential Data Output +	5	Optical Output Disable (optional)
2	Signal Ground (optional)	6	Differential Data Input -
3	Differential Data Output -	7	5V Power (+/-10%) (optional)
4	Mode Fault Detection (optional)	8	Differential Data Input +



## System Specifications

---

This appendix provides the following specifications for the Sun Fire V490 server:

- “Physical Specifications” on page 201
- “Electrical Specifications” on page 202
- “Environmental Specifications” on page 203
- “Agency Compliance Specifications” on page 204
- “Clearance and Service Access Specifications” on page 204

---

## Physical Specifications

The dimensions and weight of the system are as follows.

Measurement	U.S.	Metric
Height	8.75 in	222 mm
Width	17.5 in	446 mm
Depth	24 in	610 mm
Weight		
Minimum	79 lbs	35.83 kg
Maximum	97 lbs	44 kg
Power Cord	8.2 ft	2.5 m

---

# Electrical Specifications

The following table provides the electrical specifications for the system.

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**Note** – All electrical specifications apply to a fully configured system.

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Parameter	Value
Input	
Nominal Frequencies	50 or 60 Hz
Nominal Voltage Range	Auto ranging 200–240 VAC
Maximum Current AC RMS	8A @ 200-240 VAC
Maximum AC Power Consumption	1600 W
Maximum Heat Dissipation	5459 BTU/hr

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# Environmental Specifications

The operating and non-operating environmental specifications for the system are as follows.

Parameter	Value
Operating	
Temperature	5°C to 35°C (41°F to 95°F)—IEC 60068-2-1&2
Humidity	20% to 80% RH noncondensing; 27°C (81°F) wet bulb—IEC 60068-2-3&56
Altitude	0 to 3000 meters (0 to 10,000 feet)—IEC 60068-2-13
Vibration	.0001 (z-axis only) G <sup>2</sup> /Hz, 5-150 Hz, -12db/octave slope, 150-500 Hz— IEC 60068-2-13
Shock	3g peak, 11 milliseconds half-sine pulse—IEC 60068-2-27
Declared Acoustics	72 DbA
Non-Operating	
Temperature	-20°C to 60°C (-4°F to 140°F)—IEC 60068-2-1&2
Humidity	95% RH noncondensing—IEC 60068-2-3&56
Altitude	0 to 12,000 meters (0 to 40,000 feet)—IEC 60068-2-13
Vibration	.001 (z-axis only) G <sup>2</sup> /Hz, 5-150 Hz, -12db/octave slope, 150-500 Hz— IEC 60068-2-13
Shock	10g peak, 11 milliseconds half-sine pulse—IEC 60068-2-27
Handling Drops	25 mm (10 in)
Threshold Impact	1 meter/second

---

# Agency Compliance Specifications

The system complies with the following specifications.

Category	Relevant Standards
Safety	UL 60950, CB Scheme IEC 60950, CSA C22.2 No. 60950-00 from UL TUV EN 60950
RFI/EMI	47 CFR 15B Class A EN55022 Class A VCCI Class A ICES-003 AS/NZ 3548 CNS 13438
Immunity	EN55024 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11

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# Clearance and Service Access Specifications

Minimum clearances needed for servicing the system are as follows.

Blockage	Required Clearance
Front Blockage Only	36 in (92 cm)
Rear Blockage Only	36 in (92 cm)
Front and Rear Blockage	36 in (92 cm)
Front Clearance	36 in (92 cm)
Rear Clearance	36 in (92 cm)

---



## Board Connector Locations

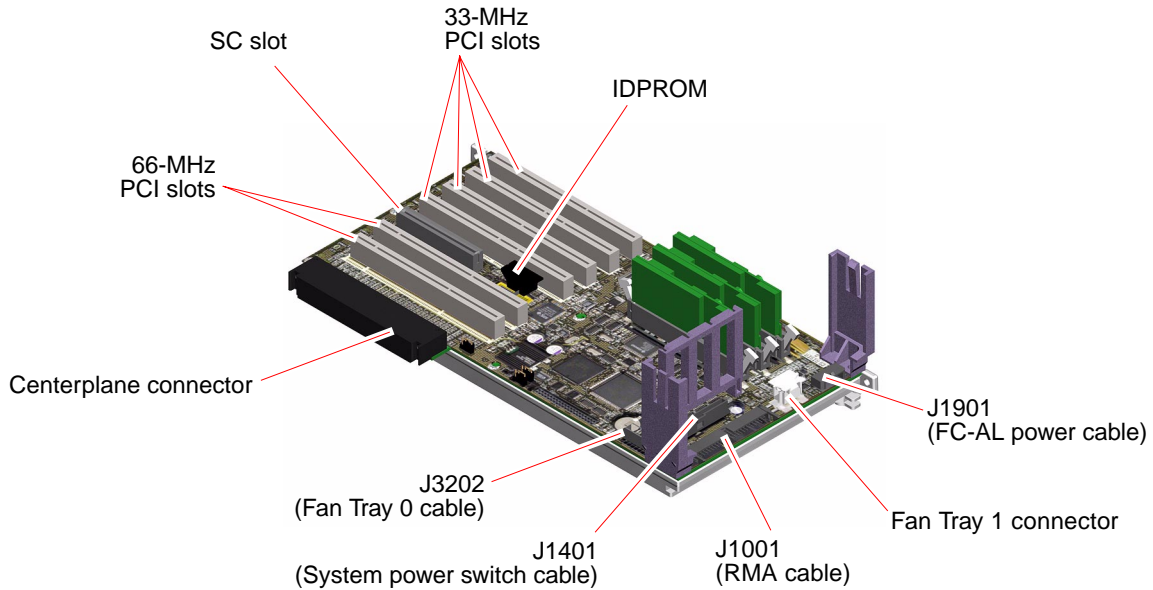
---

This appendix illustrates the connector locations on the system boards. It contains the following sections:

- “PCI Riser Board Connectors” on page 206
- “FC-AL Backplane Connectors” on page 206
- “Centerplane Connectors” on page 207
- “SC Card Connectors” on page 209

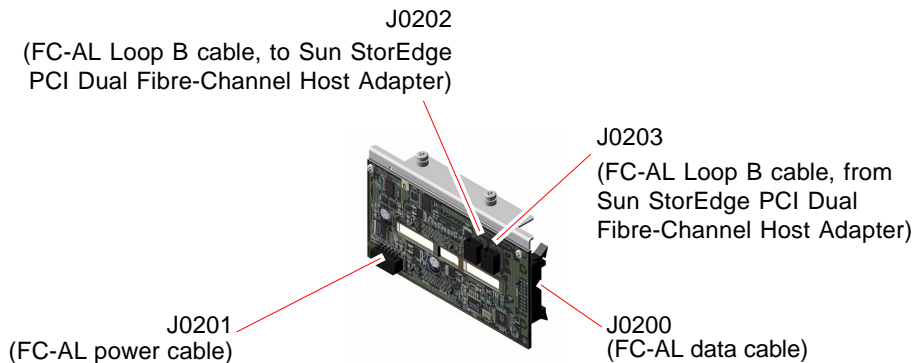
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## PCI Riser Board Connectors



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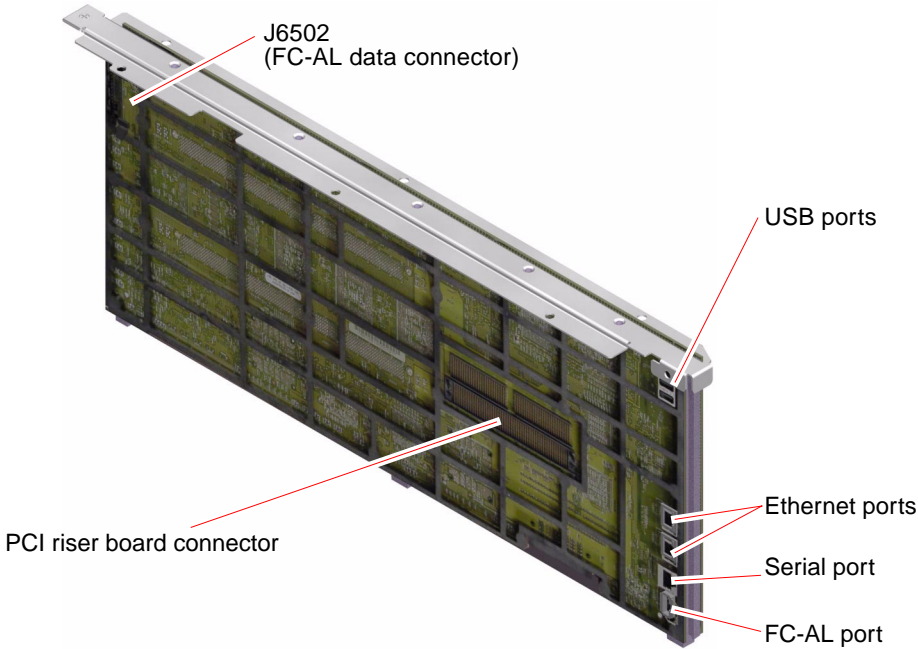
## FC-AL Backplane Connectors



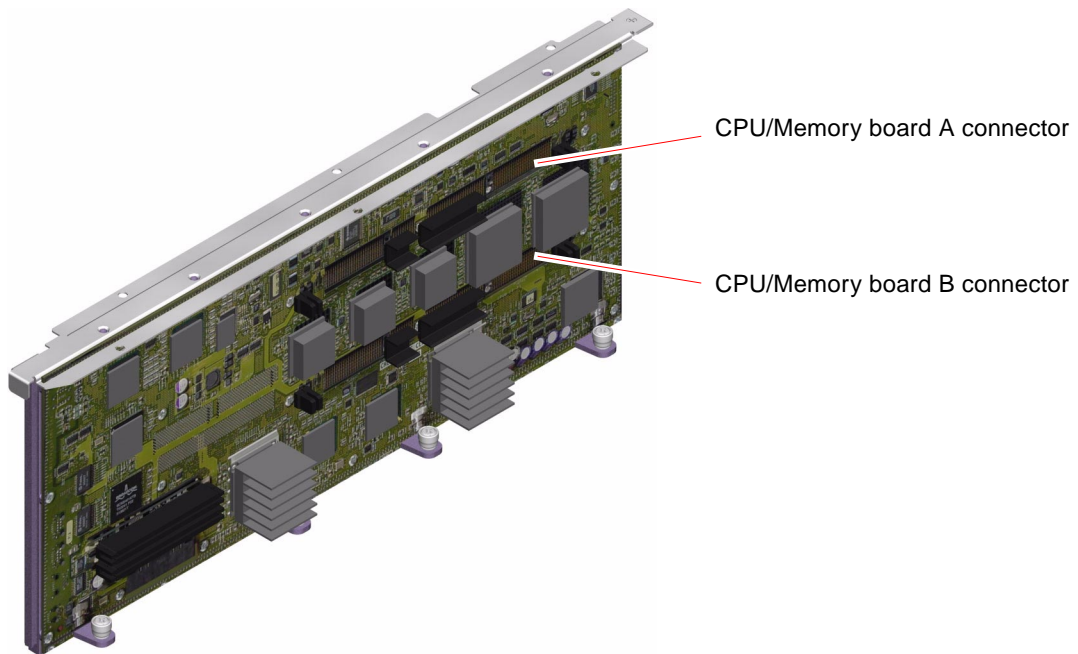
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# Centerplane Connectors

## PCI Riser Board-Side Connectors

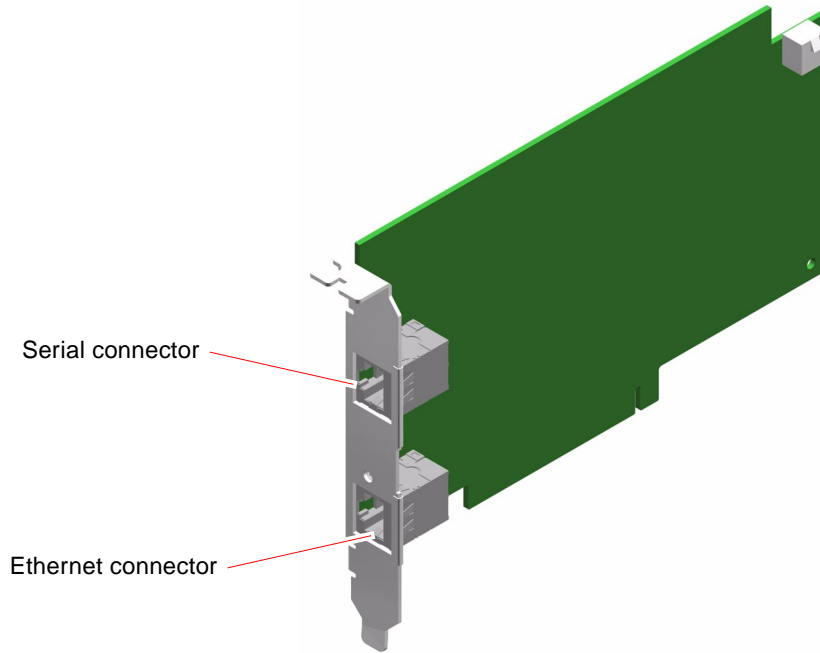


## CPU/Memory Board-Side Connectors



---

# SC Card Connectors





## Illustrated Parts Breakdown

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This appendix consists of a sequence of illustrations that show how the various pieces of the system fit together. Use the accompanying tables as a reference for ordering field-replaceable units (FRUs).

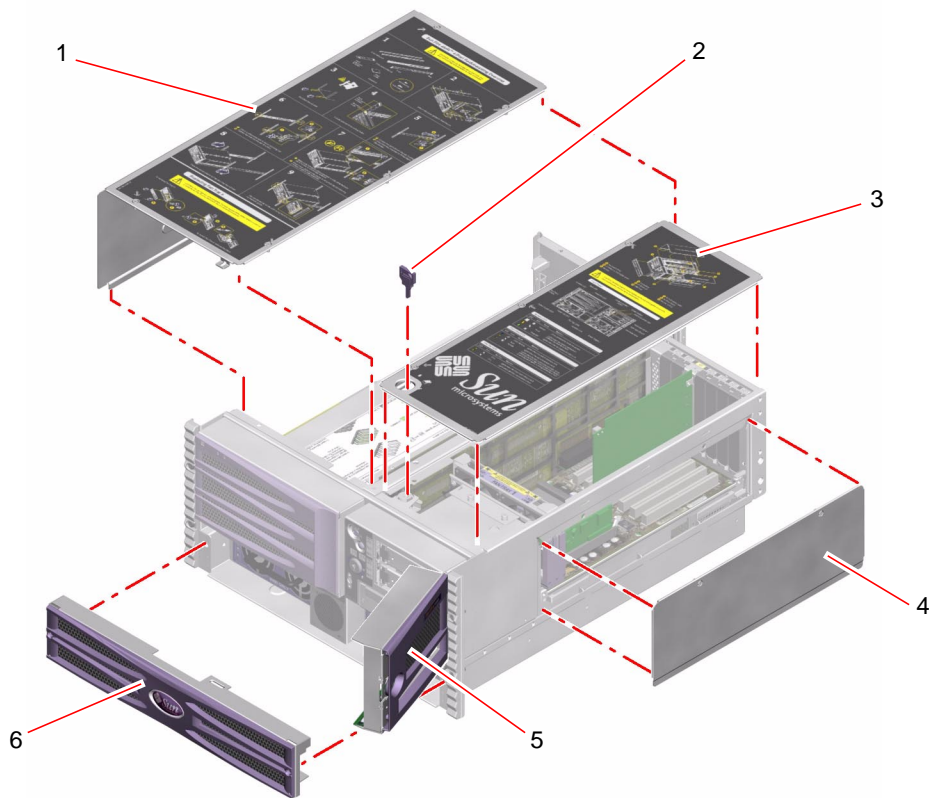
The part numbers listed in the following tables are correct as of the manual publication date but are subject to change without notice. Consult your authorized Sun sales representative or service provider to confirm a part number prior to ordering a replacement part.

This illustrated parts breakdown is divided into the following sections:

- “Chassis Doors and Access Panels” on page 212
- “CPU-Side Components” on page 213
- “PCI-Side Components” on page 214
- “Front Panel Components” on page 215
- “Miscellaneous Components” on page 216
- “System Cables” on page 217

# Chassis Doors and Access Panels

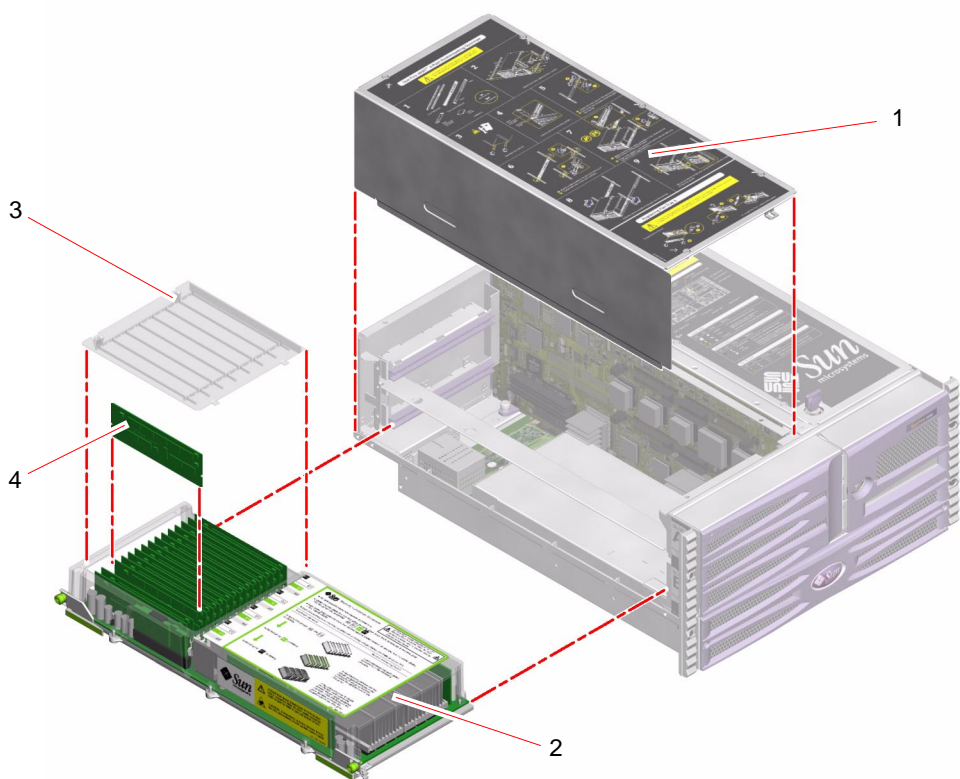
Reference Number	Part	Part Number
1	CPU access panel	540-4713 (Not a FRU)
2	System key	330-2014 (Not a FRU)
3	PCI access panel	540-4714 (Not a FRU)
4	PCI riser board access panel	540-4712 (Not a FRU)
5	Media door	540-4907 (Not a FRU)
6	Power supply access panel	540-4765 (Not a FRU)





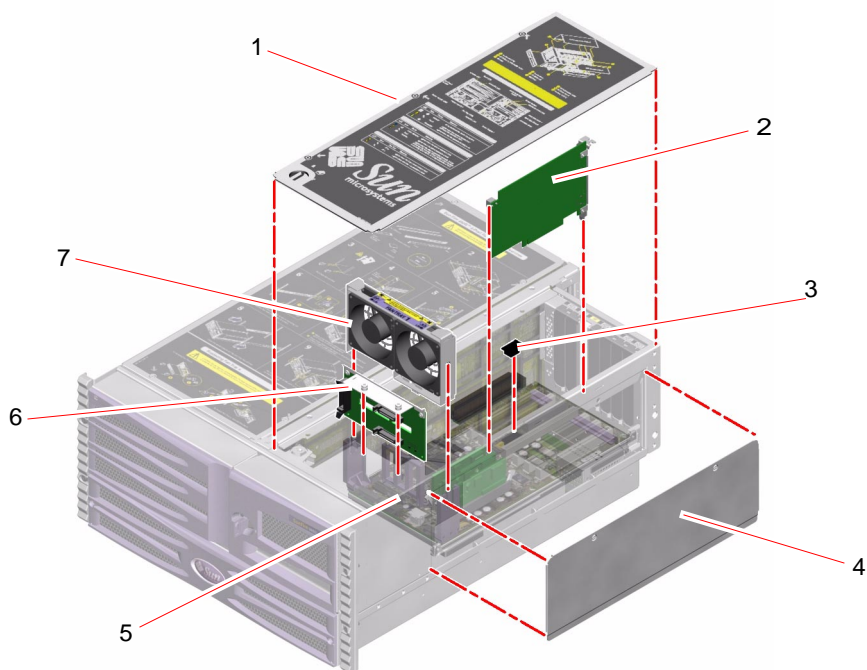
# CPU-Side Components

Reference Number	Part	Part Number
1	CPU access panel	540-4713 (Not a FRU)
2	900 MHz CPU/Memory board	F501-6809
3	DIMM access panel	(Shipped with F501-6334)
4	512 MB DIMM	F501-5030
	1 GB DIMM (not shown)	F540-5086



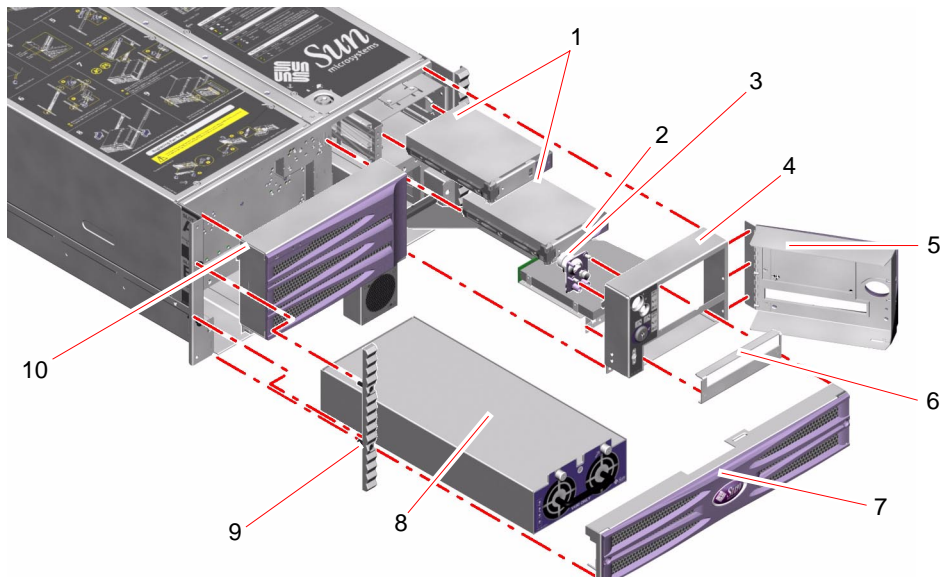
# PCI-Side Components

Reference Number	Part	Part Number
1	PCI access panel	540-4714 (Not a FRU)
2	System controller (SC) card	F501-6767
3	IDPROM	(Shipped with F501-5820)
4	PCI riser board access panel	540-4712 (Not a FRU)
5	PCI riser board	F501-5820
6	FC-AL backplane	F501-5822
7	Fan Tray 1	F540-4716



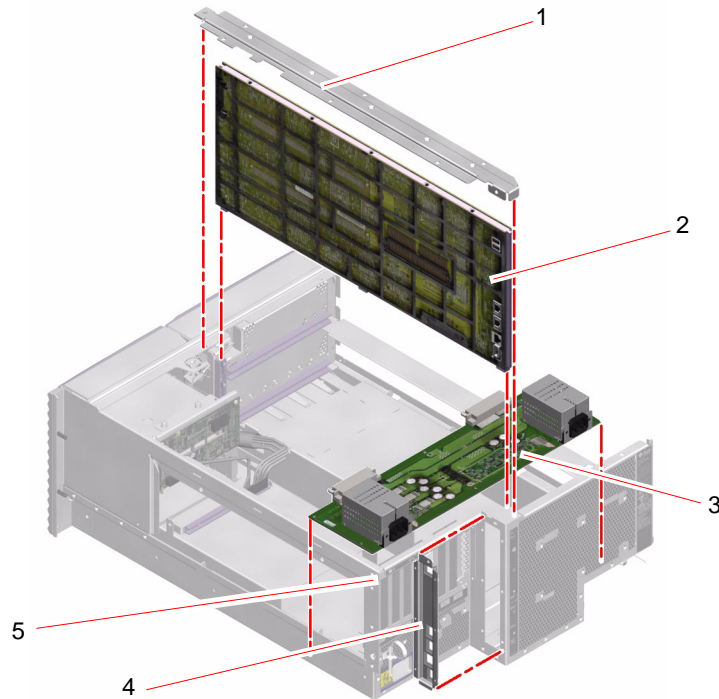
# Front Panel Components

Reference Number	Part	Part Number
1	36 GB FC-AL disk drive 73 GB FC-AL disk drive (not shown)	F540-4525 F540-5408
2	DVD-ROM drive	F370-4412
3	System control switch/power button cable	F540-5063
4	Front bezel	540-4911 (Not a FRU)
5	Media door	540-4907 (Not a FRU)
6	RMA bezel	(Not a FRU)
7	Power supply access panel	540-4765 (Not a FRU)
8	Power supply	F300-1632
9	Decorative panel	330-3277 (Not a FRU)
10	Fan Tray 0	F540-4715



# Miscellaneous Components

Reference Number	Part	Part Number
1	Centerplane top stiffener	540-4791 (Not a FRU)
2	Centerplane	F501-5819
3	Power distribution board	F375-3168
4	External connector faceplate	540-4835 (Not a FRU)
5	Back panel status LED assembly	F370-4388



---

# System Cables

See TABLE 7-1 for cable connections and routing.

<b>Part</b>	<b>Part Number</b>
System control switch/power button cable	F540-5063
RMA cable	F375-3053
FC-AL power cable	F530-3013
FC-AL data cable	F530-3069
Fan Tray 0 cable	F540-5064
Back panel LED flex circuit	F370-4388
FC-AL Loop B cable (ordered separately)	F530-3018



# Safety Precautions

---

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

## Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

## Symbols

The following symbols may appear in this book and/or on the product:



---

**Caution** – There is risk of personal injury and equipment damage. Follow the instructions.

---



---

**Caution** – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

---



---

**Caution** – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

---

Depending on the type of power switch your device has, one of the following symbols may be used:



---

**On** – Applies AC power to the system.



---

---

**Off** – Removes AC power from the system.



---

---

**Standby** – The On/Standby switch is in the standby position.

---

## Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

## Placement of a Sun Product



---

**Caution** – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

---



---

**Caution** – The workplace-dependent noise level defined in DIN 45 635 Part 1000 must be 70Db(A) or less.

---

## SELV Compliance

Safety status of I/O connections comply to SELV requirements.



## Power Cord Connection



**Caution** – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

---



**Caution** – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

---



**Caution** – Your Sun product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

---



**Caution** – In order to remove all power from the system, disconnect all power cords.

---

The following caution applies only to devices with a Standby power switch:



**Caution** – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

---

## Lithium Battery



**Caution** – The Sun Fire V490 system PCI riser board and SC card contain lithium batteries. Batteries are not customer replaceable parts. They may explode if mishandled. Do not dispose of the battery in fire. Do not disassemble it or attempt to recharge it.

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## System Unit Access Panels

You must remove the access panels of your Sun Fire V490 to add cards or memory. Be sure to replace and secure the access panels before powering on your system.



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**Caution** – Do not operate your system while the access panels are removed. Failure to take this precaution may result in personal injury and system damage.

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## Laser Compliance Notice

Sun products that use laser technology comply with Class 1 laser requirements.

Class 1 Laser Product  
Luokan 1 Laserlaite  
Klasse 1 Laser Apparat  
Laser Klasse 1

## CD-ROM



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**Caution** – Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

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# Einhaltung sicherheitsbehördlicher Vorschriften

Auf dieser Seite werden Sicherheitsrichtlinien beschrieben, die bei der Installation von Sun-Produkten zu beachten sind.

## Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsvorkehrungen, wenn Sie Ihr Gerät installieren:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie auf keinen Fall irgendwelche Gegenstände in Öffnungen in den Geräten. Leitfähige Gegenstände könnten aufgrund der möglicherweise vorliegenden gefährlichen Spannungen einen Kurzschluß verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.

## Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:



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**Achtung** – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen.

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**Achtung** – Hohe Temperatur. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.

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**Achtung** – Gefährliche Spannungen. Anweisungen befolgen, um Stromschläge und Verletzungen zu vermeiden.

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Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole benutzt werden:



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**Ein** – Setzt das System unter Wechselstrom.

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**Aus** – Unterbricht die Wechselstromzufuhr zum Gerät.

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**Wartezustand** (Stand-by-Position) - Der Ein-/Wartezustand-Schalter steht auf Wartezustand. Änderungen an Sun-Geräten.

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Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, übernimmt bei einem Sun-Produkt, das geändert wurde, keine Verantwortung für die Einhaltung behördlicher Vorschriften

## Aufstellung von Sun-Geräten



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**Achtung** – Um den zuverlässigen Betrieb Ihres Sun-Geräts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder verdeckt werden. Sun-Produkte sollten niemals in der Nähe von Heizkörpern oder Heizluftklappen aufgestellt werden.

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**Achtung** – Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70Db(A) oder weniger.

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## Einhaltung der SELV-Richtlinien

Die Sicherung der I/O-Verbindungen entspricht den Anforderungen der SELV-Spezifikation.

## Anschluß des Netzkabels



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**Achtung** – Sun-Produkte sind für den Betrieb an Einphasen-Stromnetzen mit geerdetem Nulleiter vorgesehen. Um die Stromschlaggefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Stromquellen an. Ihr Betriebsleiter oder ein qualifizierter Elektriker kann Ihnen die Daten zur Stromversorgung in Ihrem Gebäude geben.

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**Achtung** – Nicht alle Netzkabel haben die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastungsschutz und sind daher für Computersysteme nicht geeignet.

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**Achtung** – Ihr Sun-Gerät wird mit einem dreiadrigen Netzkabel für geerdete Netzsteckdosen geliefert. Um die Gefahr eines Stromschlags zu reduzieren, schließen Sie das Kabel nur an eine fachgerecht verlegte, geerdete Steckdose an.

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**Achtung** – Bei Produkten mit mehreren Kabeln müssen zur vollständigen Unterbrechung der Stromversorgung alle Kabel abgezogen werden.

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Die folgende Warnung gilt nur für Geräte mit Wartezustand-Netzschalter:



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**Achtung** – Der Ein/Aus-Schalter dieses Geräts schaltet nur auf Wartezustand (Stand-By-Modus). Um die Stromzufuhr zum Gerät vollständig zu unterbrechen, müssen Sie das Netzkabel von der Steckdose abziehen. Schließen Sie den Stecker des Netzkabels an eine in der Nähe befindliche, frei zugängliche, geerdete Netzsteckdose an. Schließen Sie das Netzkabel nicht an, wenn das Netzteil aus der Systemeinheit entfernt wurde.

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## Lithiumbatterie



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**Achtung** – CPU-Karten von Sun verfügen über eine Echtzeituhr mit integrierter Lithiumbatterie (Teile-Nr. MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, oder MK48T08). Diese Batterie darf nur von einem qualifizierten Servicetechniker ausgewechselt werden, da sie bei falscher Handhabung explodieren kann. Werfen Sie die Batterie nicht ins Feuer. Versuchen Sie auf keinen Fall, die Batterie auszubauen oder wiederaufzuladen.

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## Gehäuseabdeckung

Sie müssen die obere Abdeckung Ihres Sun-Systems entfernen, um interne Komponenten wie Karten, Speicherchips oder Massenspeicher hinzuzufügen. Bringen Sie die obere Gehäuseabdeckung wieder an, bevor Sie Ihr System einschalten.



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**Achtung** – Bei Betrieb des Systems ohne obere Abdeckung besteht die Gefahr von Stromschlag und Systemschäden.

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## Einhaltung der Richtlinien für Laser

Sun-Produkte, die mit Laser-Technologie arbeiten, entsprechen den Anforderungen der Laser Klasse 1.

Class 1 Laser Product  
Luokan 1 Laserlaite  
Klasse 1 Laser Apparat  
Laser Klasse 1

### CD-ROM



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**Warnung** – Die Verwendung von anderen Steuerungen und Einstellungen oder die Durchführung von Prozeduren, die von den hier beschriebenen abweichen, können gefährliche Strahlungen zur Folge haben.

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## Conformité aux normes de sécurité

Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

### Mesures de sécurité

Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel :

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- Ne jamais introduire d'objets quels qu'ils soient dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

## Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés :



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**Attention:** – risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.

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**Attention:** – surface à température élevée. Évitez le contact. La température des surfaces est élevée et leur contact peut provoquer des blessures corporelles.

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**Attention:** – présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.

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Un des symboles suivants sera peut-être utilisé en fonction du type d'interrupteur de votre système:



**MARCHE** – Votre système est sous tension (courant alternatif).

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**ARRET** - Votre système est hors tension (courant alternatif).

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**VEILLEUSE** – L'interrupteur Marche/Veilleuse est en position « Veilleuse ».

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## Modification du matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

## Positionnement d'un produit Sun



**Attention:** – pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'une source de chaleur.

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**Attention:** – Le niveau de pression acoustique au poste de travail s'élève selon la norme DIN 45 635 section 1000, à 70 dB (A) ou moins.

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## Conformité SELV

Sécurité : les raccordements E/S sont conformes aux normes SELV.

## Connexion du cordon d'alimentation



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**Attention:** – les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.

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**Attention:** – tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.

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**Attention:** – votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils (avec prise de terre). Pour écarter tout risque d'électrocution, branchez toujours ce cordon dans une prise mise à la terre.

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**Attention:** – débranchez tous les cordons pour couper l'alimentation du système.

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L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur VEILLEUSE:



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**Attention:** – le commutateur d'alimentation de ce produit fonctionne comme un dispositif de mise en veille uniquement. C'est la prise d'alimentation qui sert à mettre le produit hors tension. Veillez donc à installer le produit à proximité d'une prise murale facilement accessible. Ne connectez pas la prise d'alimentation lorsque le châssis du système n'est plus alimenté.

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## Batterie au lithium



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**Attention:** – sur les cartes CPU Sun, une batterie au lithium (référence MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, ou MK48T08.) a été moulée dans l'horloge temps réel SGS. Les batteries ne sont pas des pièces remplaçables par le client. Elles risquent d'exploser en cas de mauvais traitement. Ne pas jeter la batterie au feu. Ne pas la démonter ni tenter de la recharger.

---

## Couvercle

Pour ajouter des cartes, de la mémoire, ou des unités de stockage internes, vous devrez démonter le couvercle de l'unité système Sun. Ne pas oublier de remettre ce couvercle en place avant de mettre le système sous tension.



---

**Attention:** – il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels..

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## Conformité aux certifications Laser

Les produits Sun qui font appel aux technologies lasers sont conformes aux normes de la classe 1 en la matière.

Class 1 Laser Product  
Luokan 1 Laserlaitte  
Klasse 1 Laser Apparat  
Laser Klasse 1

## CD-ROM



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**Attention:** – L'utilisation de contrôles, de réglages ou de performances de procédures autre que celle spécifiée dans le présent document peut provoquer une exposition à des radiations dangereuses.

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## Normativas de seguridad

El siguiente texto incluye las medidas de seguridad que se deben seguir cuando se instale algún producto de Sun Microsystems.

### Precauciones de seguridad

Para su protección observe las siguientes medidas de seguridad cuando manipule su equipo:

- Siga todas los avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de la red eléctrica concuerdan con las descritas en las etiquetas de especificaciones eléctricas del equipo.
- No introduzca nunca objetos de ningún tipo a través de los orificios del equipo. Pueden haber voltajes peligrosos. Los objetos extraños conductores de la electricidad pueden producir cortocircuitos que provoquen un incendio, descargas eléctricas o daños en el equipo.

### Símbolos

En este libro aparecen los siguientes símbolos:



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**Precaución** – Existe el riesgo de lesiones personales y daños al equipo. Siga las instrucciones.

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**Precaución** – Superficie caliente. Evite el contacto. Las superficies están calientes y pueden causar daños personales si se tocan.

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**Precaución** – Voltaje peligroso presente. Para reducir el riesgo de descarga y daños para la salud siga las instrucciones.

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Según el tipo de interruptor de encendido que su equipo tenga, es posible que se utilice uno de los siguientes símbolos:



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**Encendido** – Aplica la alimentación de CA al sistema.

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**Apagado** - Elimina la alimentación de CA del sistema.

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**En espera** – El interruptor de Encendido/En espera se ha colocado en la posición de En espera.

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## Modificaciones en el equipo

No realice modificaciones de tipo mecánico o eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de las normativas de seguridad en los equipos Sun modificados.

## Ubicación de un producto Sun



---

**Precaución** – Para asegurar la fiabilidad de funcionamiento de su producto Sun y para protegerlo de sobrecalentamientos no deben obstruirse o taparse las rejillas del equipo. Los productos Sun nunca deben situarse cerca de radiadores o de fuentes de calor.

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**Precaución** – De acuerdo con la norma DIN 45 635, Parte 1000, se admite un nivel de presión acústica para puestos de trabajo máximo de 70Db(A).

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## Cumplimiento de la normativa SELV

El estado de la seguridad de las conexiones de entrada/salida cumple los requisitos de la normativa SELV.

## Conexión del cable de alimentación eléctrica



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**Precaución** – Los productos Sun están diseñados para trabajar en una red eléctrica monofásica con toma de tierra. Para reducir el riesgo de descarga eléctrica, no conecte los productos Sun a otro tipo de sistema de alimentación eléctrica. Póngase en contacto con el responsable de mantenimiento o con un electricista cualificado si no está seguro del sistema de alimentación eléctrica del que se dispone en su edificio.

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**Precaución** – No todos los cables de alimentación eléctrica tienen la misma capacidad. Los cables de tipo doméstico no están provistos de protecciones contra sobrecargas y por tanto no son apropiados para su uso con computadores. No utilice alargadores de tipo doméstico para conectar sus productos Sun.

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**Precaución** – Con el producto Sun se proporciona un cable de alimentación con toma de tierra. Para reducir el riesgo de descargas eléctricas conéctelo siempre a un enchufe con toma de tierra.

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**Precaución** – Para eliminar completamente la alimentación de esta unidad, desconecte todos los cables de alimentación.

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La siguiente advertencia se aplica solamente a equipos con un interruptor de encendido que tenga una posición "En espera":



**Precaución** – El interruptor de encendido de este producto funciona exclusivamente como un dispositivo de puesta en espera. El enchufe de la fuente de alimentación está diseñado para ser el elemento primario de desconexión del equipo. El equipo debe instalarse cerca del enchufe de forma que este último pueda ser fácil y rápidamente accesible. No conecte el cable de alimentación cuando se ha retirado la fuente de alimentación del chasis del sistema.

---

## Batería de litio



**Precaución** – En las placas de CPU Sun hay una batería de litio insertada en el reloj de tiempo real, tipo SGS Núm. MK48T59Y, MK48TXXB-XX, MK48T18-XXXPCZ, M48T59W-XXXPCZ, o MK48T08. Las baterías no son elementos reemplazables por el propio cliente. Pueden explotar si se manipulan de forma errónea. No arroje las baterías al fuego. No las abra o intente recargarlas.

---

## Tapa de la unidad del sistema

Debe quitar la tapa del sistema cuando sea necesario añadir tarjetas, memoria o dispositivos de almacenamiento internos. Asegúrese de cerrar la tapa superior antes de volver a encender el equipo.



**Precaución** –Es peligroso hacer funcionar los productos Sun sin la tapa superior colocada. El hecho de no tener en cuenta esta precaución puede ocasionar daños personales o perjudicar el funcionamiento del equipo.

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## Aviso de cumplimiento con requisitos de láser

Los productos Sun que utilizan la tecnología de láser cumplen con los requisitos de láser de Clase 1.

Class 1 Laser Product  
Luokan 1 Laserlaite  
Klasse 1 Laser Apparat  
Laser Klasse 1

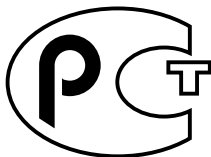
## CD-ROM



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**Precaución** – El manejo de los controles, los ajustes o la ejecución de procedimientos distintos a los aquí especificados pueden exponer al usuario a radiaciones peligrosas.

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## Nordic Lithium Battery Cautions

### Norge



---

**ADVARSEL** – Litiumbatteri —  
Ekspløsjonsfare. Ved utskifting benyttes kun  
batteri som anbefalt av apparatfabrikanten.  
Brukt batteri returneres apparatleverandøren.

---

### Sverige



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**WARNING** – Explosionsfara vid felaktigt  
batteribyte. Använd samma batterityp eller  
en ekvivalent typ som rekommenderas av  
apparatillverkaren. Kassera använt batteri  
enligt fabrikantens instruktion.

---

### Danmark



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**ADVARSEL!** – Litiumbatteri —  
Ekspløsjonsfare ved fejlagtig håndtering.  
Udskiftning må kun ske med batteri af samme  
fabrikat og type. Levér det brugte batteri  
tilbage til leverandøren.

---

### Suomi



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**VAROITUS** – Paristo voi räjähtää, jos se on  
virheellisesti asennettu. Vaihda paristo  
ainoastaan laitevalmistajan suosittelemaan  
tyyppiin. Hävitä käytetty paristo valmistajan  
ohjeiden mukaisesti.

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