Sun Fire™ V125 Server Service Manual

Sun Microsystems, Inc.
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Preface

The *Sun Fire V125 Server Service Manual* provides detailed instructions about service procedures for the Sun Fire™ V125 server and should be used by qualified service personnel only.

Before You Read This Document

This book does not cover server installation. For detailed information on this topic, refer to the *Sun Fire V125 Server Installation Guide*. Before following any procedures described in this book, ensure that you have read the *Sun Fire V125 Server Safety and Compliance Manual*.

Using UNIX Commands

This document does not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

Refer to one or more of the following documents for this information:

- *Solaris 10 Sun Hardware Platform Guide*
- Solaris™ Operating System documentation, which is at:

  `http://docs.sun.com`
- Other software documentation that you received with your system

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

* The settings on your browser might differ from these settings.

Related Documentation

The documents listed as online are available at:

`http://www.sun.com/products-n-solutions/hardware/docs/`

Application	Title	Part Number	Format	Location
Getting Started	*Sun Fire V125 Server Getting Started Guide*	819-7423	PDF, HTML, and hard copy	Online and accessories kit (English only)
Administration	*Sun Fire V125 Server Administration Guide*	819-7420	PDF and HTML	Online
Installation	*Sun Fire V125 Server Installation Guide*	819-7422	PDF and HTML	Online
Latest information	*Sun Fire V125 Server Product Notes*	819-7424	PDF and HTML	Online
Compliance and safety	*Sun Fire V125 Server Safety and Compliance Manual*	817-7425	PDF and HTML	Online
OpenBoot™ PROM	*OpenBoot PROM Enchancements for Diagnostic Operation*	817-6957	Hard copy	Associates kit
Lights-Out Management	*Sun Advanced Lights Out Manager (ALOM) 1.6 Administration Guide*	819-2445	PDF and HTML	Online

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CHAPTER 1

Parts Removal and Installation

This chapter contains procedures for replacing the internal hardware components for the Sun Fire V125 server. The procedures in this section are for qualified service engineers only.

Caution – Read Section 1.8, "System Configuration Card Reader" on page 1-13, and wear a properly grounded antistatic strap, before you carry out any of the procedures in this document.

The chapter contains the following sections:

- Section 1.1, "Replaceable Components" on page 1-2
- Section 1.2, "Controlling Server Power" on page 1-2
- Section 1.3, "Avoiding Electrostatic Discharge" on page 1-3
- Section 1.4, "Opening the Server" on page 1-5
- Section 1.5, "Location of Components" on page 1-10
- Section 1.6, "Front Bezel Assembly" on page 1-10
- Section 1.7, "Hard Drives" on page 1-11
- Section 1.8, "System Configuration Card Reader" on page 1-13
- Section 1.9, "Power Supply Unit" on page 1-15
- Section 1.10, "Memory" on page 1-16
- Section 1.11, "Fans" on page 1-18
- Section 1.12, "CPU, Heat Sink, and System Board Assembly" on page 1-20
- Section 1.13, "Lower Interface Board Assembly" on page 1-23
- Section 1.14, "PCI Cards" on page 1-25
- Section 1.15, "Sun Cryptographic Accelerator" on page 1-27
- Section 1.16, "Battery" on page 1-29

1.1 Replaceable Components

Replaceable components in the front of the server are:

- Bezel assembly
- Hard drive
- System configuration card reader
- Lower interface board

The remaining replaceable components are in the back of the server.

Caution – Printed circuit boards and hard 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.

Before you carry out the procedures covered in this document, the server must be powered down. To do this you must remove the power cable. Follow the instructions in Section 1.2.2, "Powering Off the Server" on page 1-3.

1.2 Controlling Server Power

The On/Standby button does not power off the server, but it toggles the server between On and Standby mode.

1.2.1 Powering On the Server

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

1. **Connect the server to an AC power source.**

   Once connected, the server automatically goes into Standby power mode.

2. **Turn on power to any peripherals and external storage devices you have connected to the server.**

   Read the documentation supplied with the device for specific instructions.

3. **Open the bezel.**
4. **Press the On/Standby switch.**
5. **Close the bezel.**

1.2.2 Powering Off the Server

1. **Notify users that the system will be powered down.**
2. **Back up system files and data.**
3. **Press and release the On/Standby switch behind the bezel.**

   The system begins an orderly software system shutdown.

Note – Pressing and releasing the On/Standby switch initiates an orderly software shutdown. Pressing and holding the switch for four seconds causes an immediate hardware shutdown. Whenever possible, initiate an orderly shutdown. Forcing an immediate hardware shutdown can corrupt the hard drive and cause loss of data.

---

4. **Wait for the front panel green indicator to go out.**

Caution – As long as the power cord is connected, potentially hazardous energy is present inside the server.

---

5. **Disconnect the power cable.**

   This is the only way to remove power from the server. Electrical power is present when the server is in Standby mode.

1.3 Avoiding Electrostatic Discharge

Whenever you work with the server's internal components, follow this procedure to prevent damage caused by static electricity.

You need the following items:

- Antistatic wrist or foot strap
- Antistatic mat

1.3.1 Avoiding Electrostatic Discharge While Working on the Back of the Server

1. **Power off the server.**

   See Section 1.2, "Controlling Server Power" on page 1-2.

2. **Open the back section of the cover.**

   See Section 1.4, "Opening the Server" on page 1-5.

3. **Attach one end of the antistatic strap to the grounding stud located on the partition inside the server, and the other end to your wrist.**

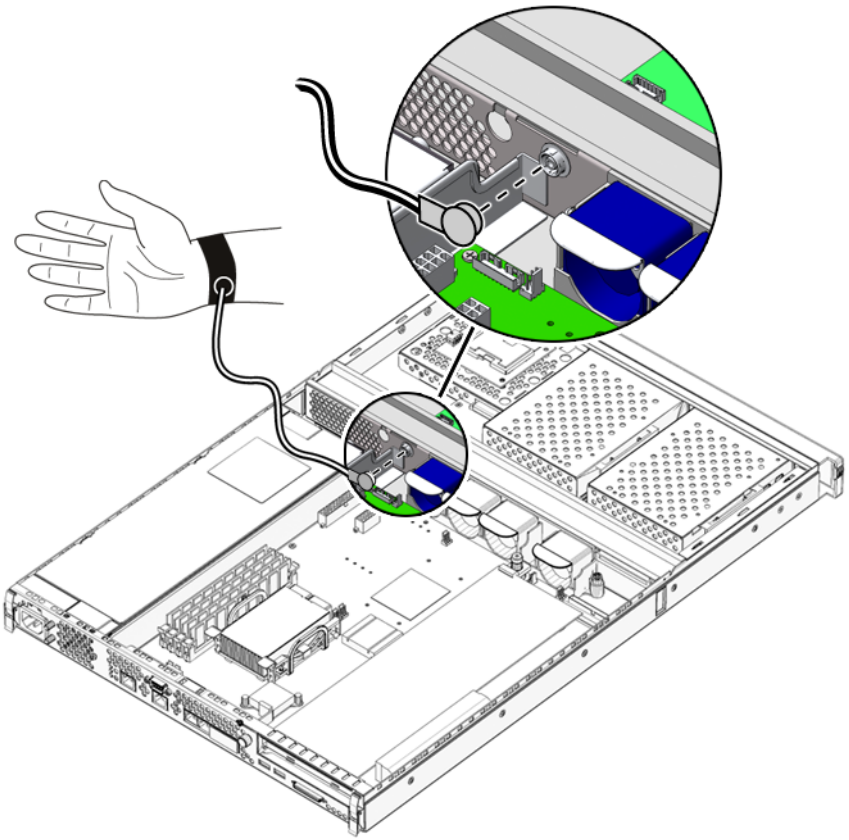

FIGURE 1-1 Grounding Point in Back of the Server

1.3.2 Avoiding Electrostatic Discharge While Working on the Front of the Server

1. **Power off the server.**

   See Section 1.2, "Controlling Server Power" on page 1-2.

2. **Perform either Step a or Steps b and c.**

   a. **Attach one end of the antistatic strap to a grounding point on the rack and the other to your wrist.**

   b. **Remove the server from the rack.**

   c. **Place the server on an antistatic mat or other suitable antistatic surface.**

      Suitable antistatic surfaces include:

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

1.4 Opening the Server

The cover of the server is split into two sections, front and back.

- The back section hinges to provide access.
- The front section detaches to provide access.
- The whole cover assembly detaches to provide access to both front and back sections of the server. This is necessary to replace some components.

Caution – Disconnect the power cord before carrying out this procedure. As long as the power cord is connected, potentially hazardous energy is present inside the server.

Caution – After servicing, install and fasten the cover before plugging in the power cords or turning power on.

1.4.1 Removing the Front Section of the Cover Assembly

1. **Open the bezel.**
2. **Undo the screws that fasten the front section of the cover to the chassis (**FIGURE 1-2**).**

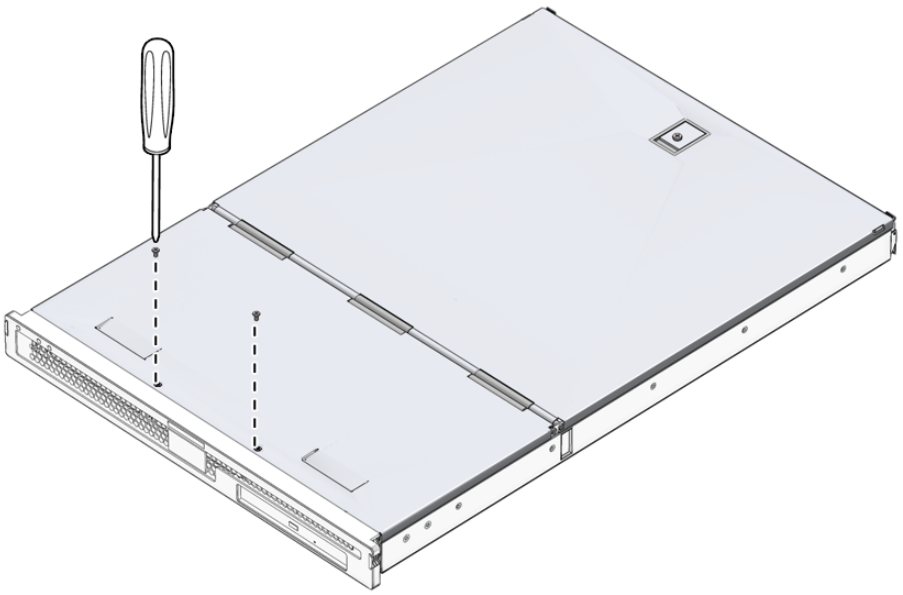

FIGURE 1-2 Location of Screws on the Front Section of the Cover

3. **Slide the front section of the cover towards the front of the server.**
   Use the indentations in the cover to provide grip if necessary.
4. **Lift off the front section of the cover (**FIGURE 1-3**).**

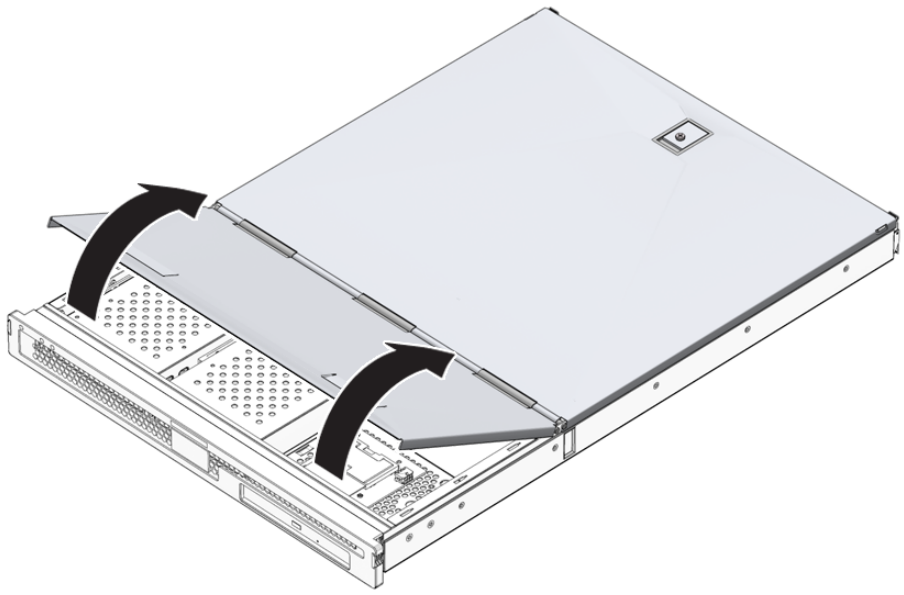

FIGURE 1-3 Removing the Front Section of the Cover

1.4.2 Installing the Front Section of the Cover Assembly

1. **Align the clips on the bottom of the cover with the corresponding slots in the server chassis.**
2. **Press the cover down into the slots.**
3. **Slide the cover towards the back of the server.**
4. **Replace the screws that fasten the cover to the server.**

1.4.3 Opening the Back Section of the Cover Assembly

1. **Locate the latches at the back of the server and release them (**FIGURE 1-4**).**
2. **Undo the captive Phillips screw in the catch on top of the server (**FIGURE 1-4**).**

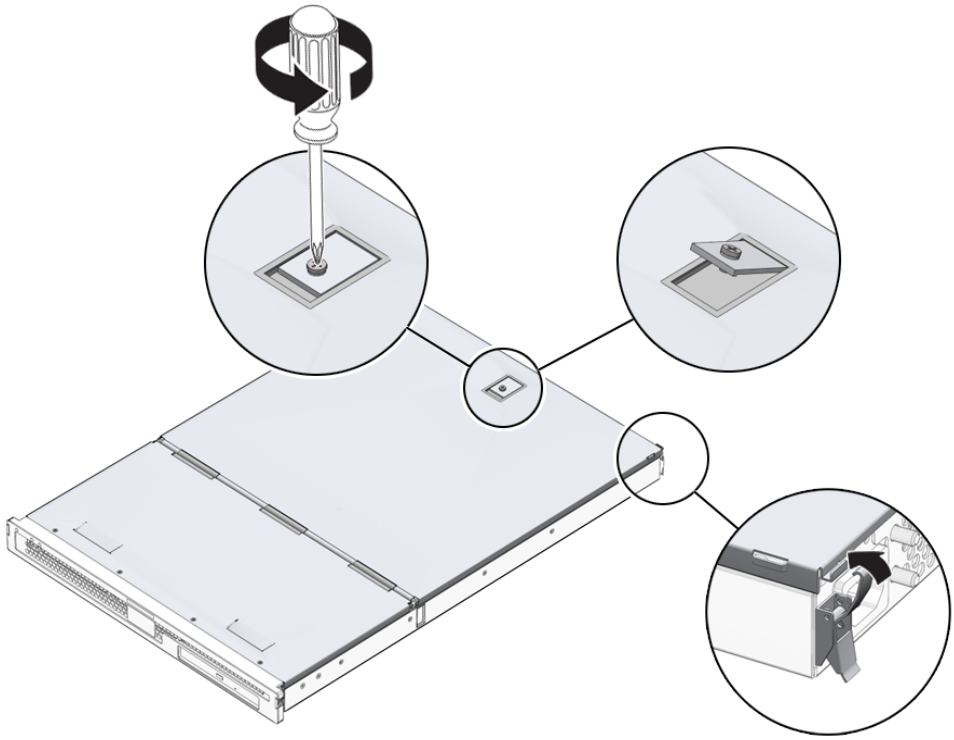

FIGURE 1-4 Location of Captive Screw and Side Catches on Back Section of the Cover

3. **Pull the lever to release the catch and lift the cover up, pulling from the center and one corner of the cover.**

   The cover hinges forward to lay flush against the front section of the server.

1.4.4 Closing the Back Section of the Cover Assembly

1. **Rotate the cover back to its closed position.**

   Ensure that the catch clips the cover into its closed position.

2. **Tighten the captive screw in the catch on the cover.**

3. **Secure the cover using the clips on the outside of the server.**

1.4.5 Removing the Whole Cover Assembly

1. **Remove the front section of the cover assembly.**

   See Section 1.4.1, “Removing the Front Section of the Cover Assembly” on page 1-6.

2. **Open the back section of the cover assembly.**

   See Section 1.4.3, “Opening the Back Section of the Cover Assembly” on page 1-7.

3. **Remove the back section of the cover assembly.**

4. **Unclip the U-channel that runs across the server and remove it (**FIGURE 1-5**).**

   You must remove this bar to reach the cables that connect the front of the server to the rear.

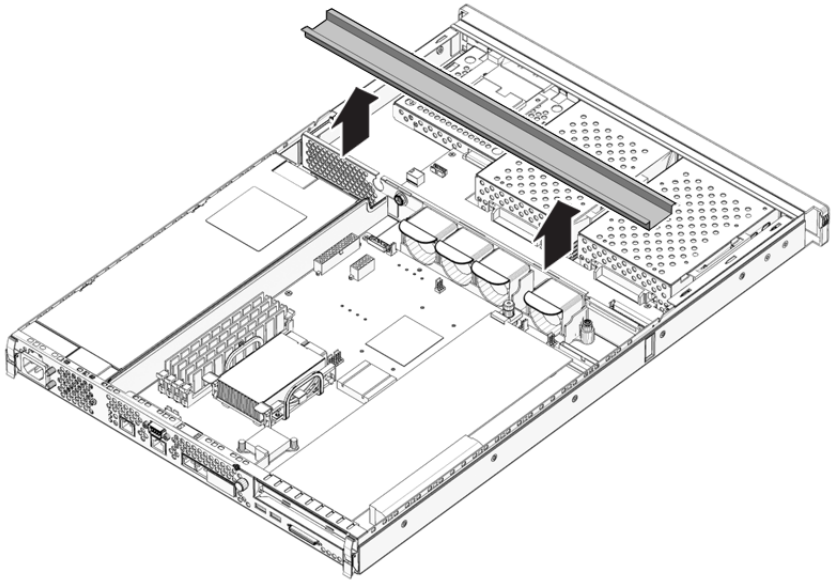

FIGURE 1-5 Removing the U-Channel

1.5 Location of Components

The internal components of the server are located in FIGURE 1-6.

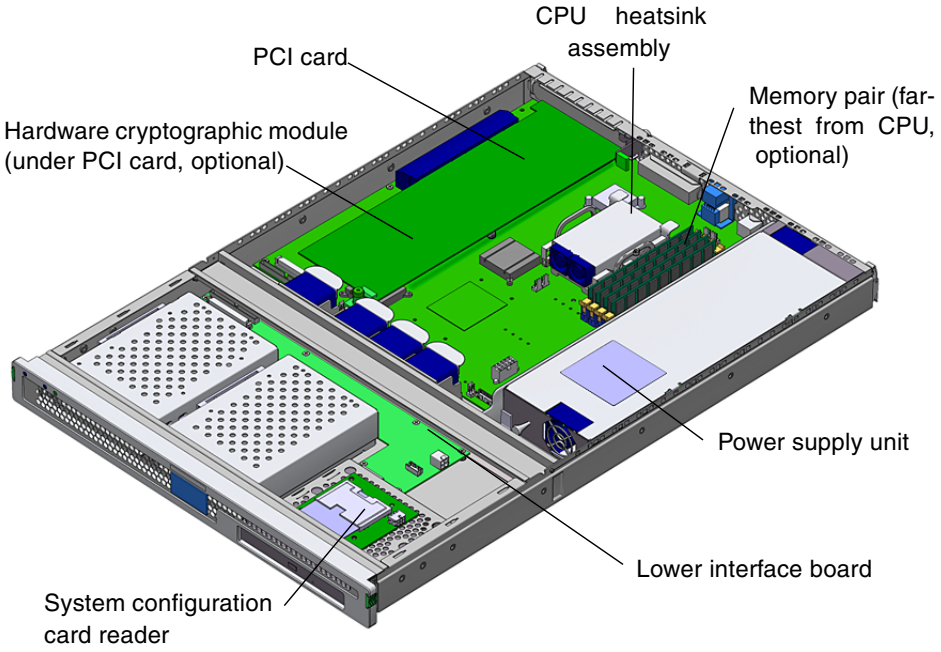

FIGURE 1-6 Location of Major Components

1.6 Front Bezel Assembly

The front bezel assembly includes the bezel, the front server status indicators, and hinges. The front bezel is replaced as a single unit.

1.6.1 Removing the Bezel Assembly

1. **Power off the server.**

   See Section 1.2, "Controlling Server Power" on page 1-2.

2. **Ensure that the server is properly grounded.**

   See the instructions in Section 1.3, "Avoiding Electrostatic Discharge" on page 1-3.

3. **Hold the bezel firmly at both ends and rotate it down to its open position.**

   Grip the bezel at the points marked by the green triangles at each end to open it. Do not attempt to open the bezel using a single gripping point or by holding the middle of the bezel, as damage may occur.

4. **Disconnect the cable connecting the bezel assembly to the server.**

5. **Unscrew the bezel hinges and remove them from the server.**

1.6.2 Installing the Bezel Assembly

1. **Locate the new bezel and hinges onto the server, and screw the bezel hinges to the server.**

2. **Reconnect the bezel cable.**

1.7 Hard Drives

For information on removing a hard drive while the operating server is running, see the *Sun Fire V125 Server Administration Guide*.

1.7.1 Removing a Hard Drive

1. **Ensure that you are properly grounded.**

   See Section 1.3, "Avoiding Electrostatic Discharge" on page 1-3.

2. **Open the front bezel.**

3. **Check that the blue indicator indicator is lit on the hard drive.**

   The blue **indicator** comes on when the hard drive is ready to remove.

4. **Slide the catch at the front of the hard drive to the right (**FIGURE 1-7**).**

   The handle on the front of the hard drive releases.

5. **Pull the handle and remove the hard drive from the server by sliding the drive out from its bay.**

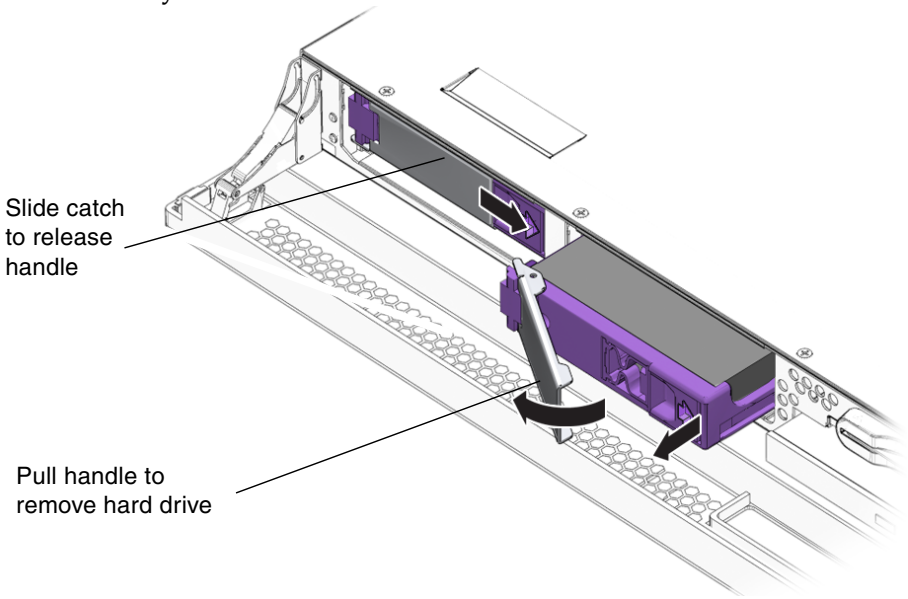

FIGURE 1-7 Removing a Hard Drive

Note – Note that in the preceding graphic, the standard configuration includes only the leftmost HDD; the second HDD is optional.

1.7.2 Installing a Hard Drive

1. **Slide the catch on the front of the hard drive to the right.**

   This releases the hard drive. The lever must be open *before* you insert the hard drive into the server. If the lever is closed, the hard drive will not correctly engage.

2. **Slide the hard drive into its bay at the front of the server.**

   Push the drive in firmly until the metal lever starts to close. The hard drive has engaged with its connector in the server.

3. **Push the metal lever until the hard drive clicks into place.**

4. **Close the bezel.**

1.8 System Configuration Card Reader

For more information on the function of the system configuration card, see the *Sun Fire V125 Server Administration Guide*.

1.8.1 Removing the System Configuration Card Reader

1. **Power off the server.**

   See Section 1.2, "Controlling Server Power" on page 1-2.

2. **Ensure that the server is properly grounded.**

   See Section 1.3, "Avoiding Electrostatic Discharge" on page 1-3.

3. **Remove the front section of the cover assembly.**

   See Section 1.4, "Opening the Server" on page 1-5.

4. **Remove the system configuration card.**

   Place the system configuration card aside **(**FIGURE 1-9**)**.

5. **Disconnect the cable leading to the lower interface board from the configuration card reader (**FIGURE 1-8**).**

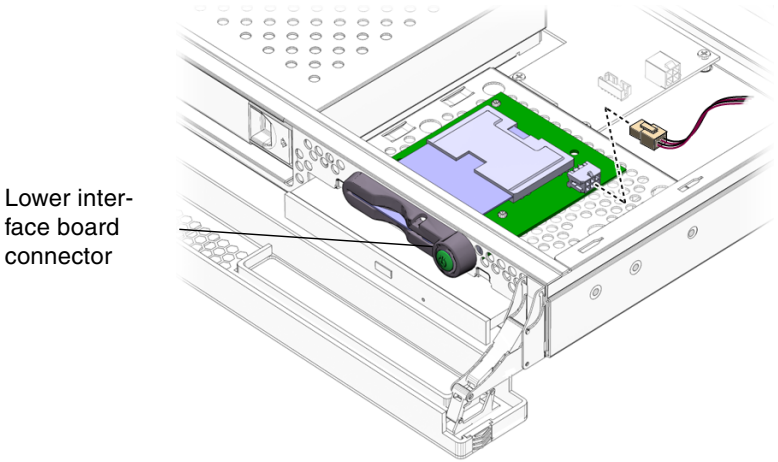

FIGURE 1-8 Location of Connectors on the System Configuration Card Reader

6. **Unclip the system configuration card reader (**FIGURE 1-9**).**

   Hold the reader board firmly and unclip one corner at a time by pulling up. Take care not to damage the On/Standby switch when you remove the assembly.

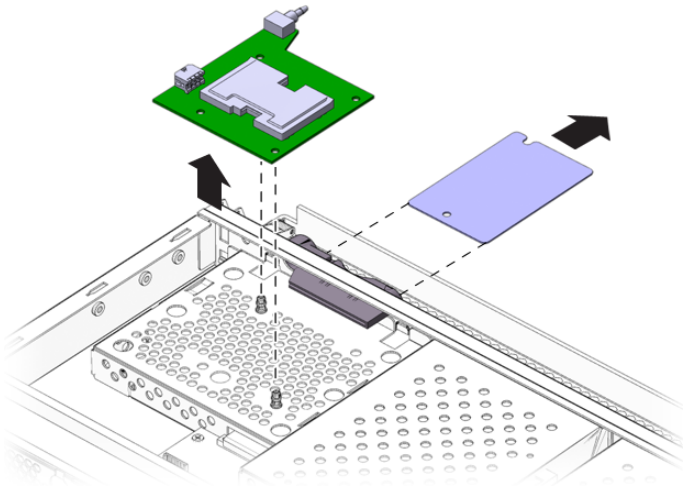

FIGURE 1-9 Removing the System Configuration Card Reader

1.8.2 Installing the System Configuration Card Reader

1. **Position the new configuration card reader board by lining up the fixing holes with the clips in the top of the DVD drive enclosure.**
2. **Press the new reader board firmly onto the clips to secure it in place.**
3. **Reconnect the system configuration card reader power cable.**
4. **Install the system configuration card.**

1.9 Power Supply Unit

1.9.1 Removing the PSU

1. **Power off the server.**

   See Section 1.2, “Controlling Server Power” on page 1-2.

2. **Ensure that the server is properly grounded.**

   See Section 1.3, “Avoiding Electrostatic Discharge” on page 1-3.

3. **Remove the cover assembly.**

   See Section 1.4, “Opening the Server” on page 1-5.

4. **Disconnect the cables leading to the system board and interface board.**

   To access the cable connector to the interface board, open the front cover assembly.

5. **Undo the two screws on the back panel of the server.**

6. **Move the PSU towards the front of the server to release it from the locating tab on the base of the server.**

7. **Lift the PSU out of the chassis.**

1.9.2 Installing a PSU

1. **Position the new PSU over the location tab and slide it towards the back of the server.**

2. **Install and tighten the two screws on the back panel of the server.**

3. **Connect the power supply wiring harness to the connectors on the system board and interface board.**

4. **Install the cover assembly.**

1.10 Memory

There are four memory module sockets per processor on the system board. Memory is supplied by Sun in pairs. Use the DIMM pair as supplied and do not mix DIMMs.

For a list of the available memory options, see the *Sun Fire V125 Server Administration Guide*.

1.10.1 Memory Configuration Rules

Memory is shipped in matched pairs for use on the Sun Fire V125 server.

When you install memory into a Sun Fire V125 server, follow the se guidelines:

- A minimum of two matched DIMMs are required for the server. The matched DIMMs must be the same size, manufacturer, and part number.
- DIMMs must be installed in identical pairs. Both size and manufacturer must be the same per pair, but you can mix manufacturers and size between pairs.

Note – A DIMM pair that has identical attributes, but different vendors will not be rejecte. However, such a DIMM pair will cause OpenBoot™ PROM to issue a warning message to the console and will disable autoboot.

1.10.2 Installing Memory

1. **Power down the server and disconnect the power cable.**

   See Section 1.2, “Controlling Server Power” on page 1-2

2. **Open the back cover.**

   See Section 1.4.3, “Opening the Back Section of the Cover Assembly” on page 1-7.

3. **Locate the correct DIMM socket.**

4. **Ensure that the retaining clips are open (**FIGURE 1-10**).**

5. **Press the memory module in the DIMM socket.**

6. **Press down until the clips snap into place.**

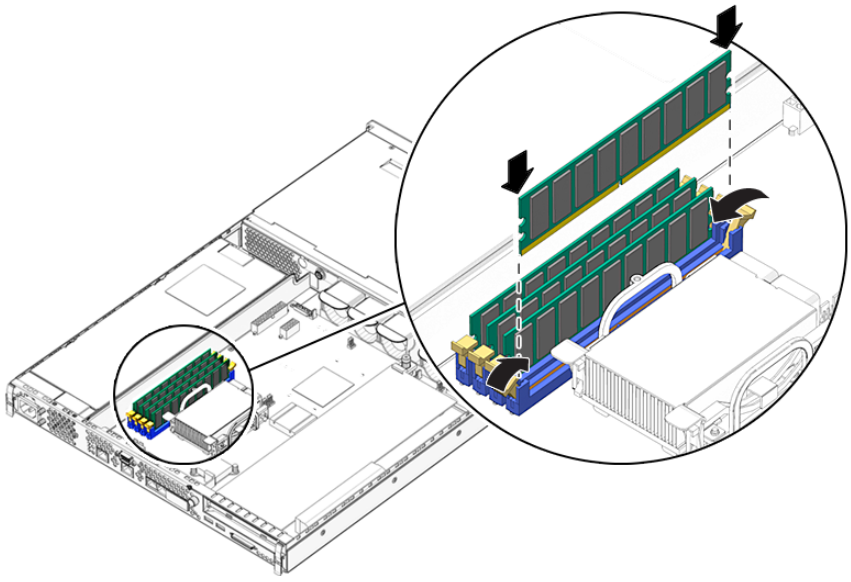

FIGURE 1-10 Installing Memory

Note – Note that the second DIMM pair shown in the preceding figure is optional. The standard configuration includes only the DIMM pair that is closest to the CPU.

1.10.3 Removing Memory

1. **Power down the server and disconnect the power cable.**
   See Section 1.2, “Controlling Server Power” on page 1-2.
2. **Open the back cover.**
   See Section 1.4.3, “Opening the Back Section of the Cover Assembly” on page 1-7.
3. **Locate the correct DIMM socket.**
4. **Open the latches at the sides of the socket.**
5. **Remove the module from the DIMM socket.**
6. **Close the rear cover.**

1.11 Fans

The Sun Fire V125 server has four 40 mm fans mounted side by side. Three of these cool the system board, while the fourth cools the PCI card area. All of these fans plug into the system board individually. The fans can be removed from the server without the use of tools.

1.11.1 Removing a Fan

1. **Open the back section of the cover.**

   See Section 1.4, "Opening the Server" on page 1-5.

2. **Disconnect the fans' power cables from the system board (**FIGURE 1-11**).**

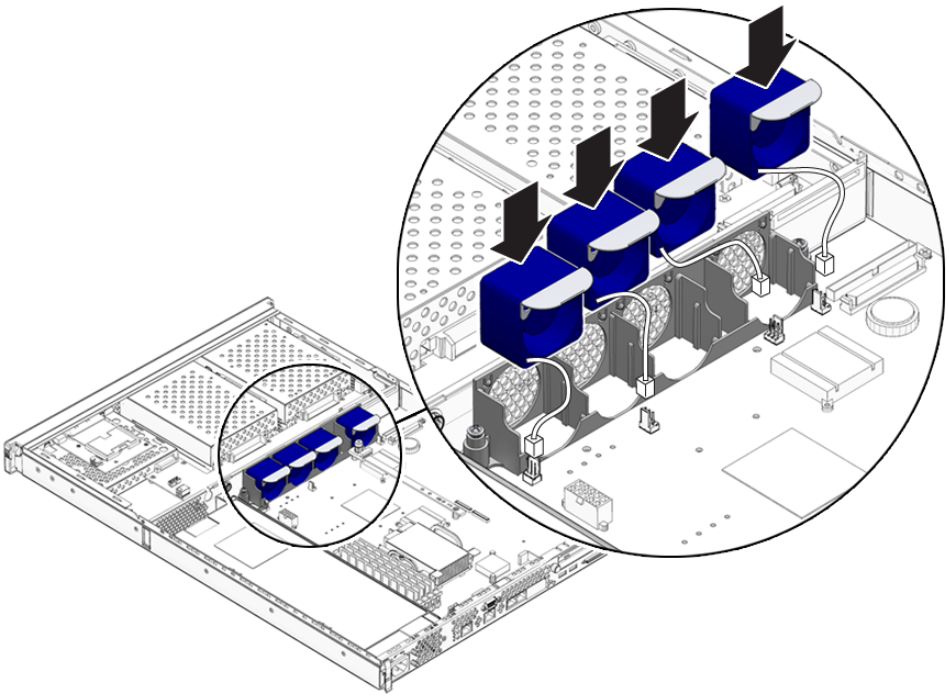

FIGURE 1-11 Disconnecting Fans' Power Cables

3. **Push back the fan retaining tab.**
4. **Lift the fan out of the chassis (**FIGURE 1-12**).**
   Pull on the tab on top of the fan assembly.

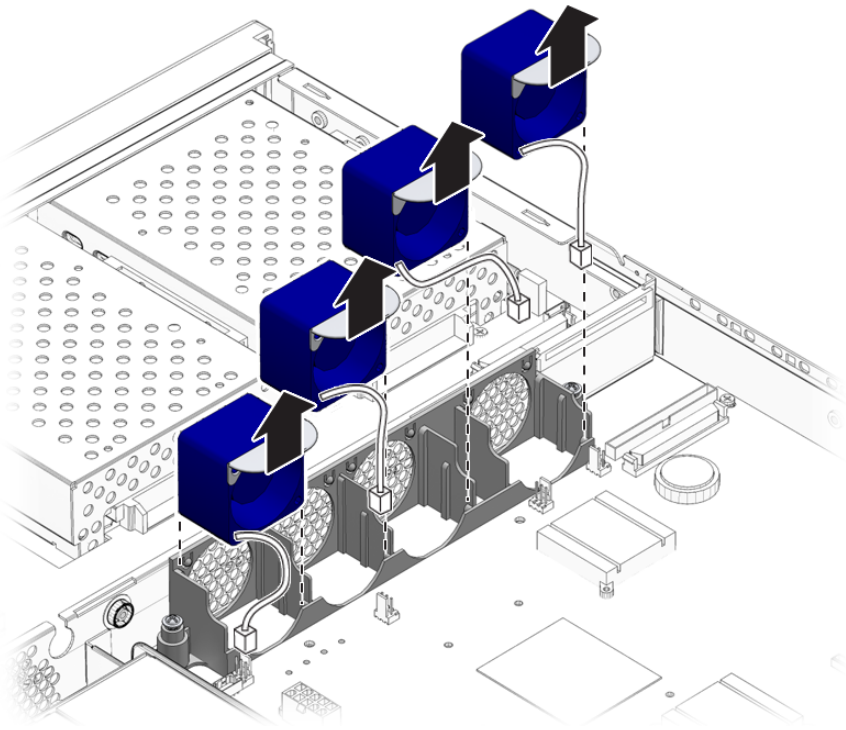

FIGURE 1-12 Removing Fans

1.11.2 Replacing a Fan

1. **Insert the replacement fan.**
2. **Connect the fan's power cable to the system board.**
3. **Install the back section of the cover.**

1.12 CPU, Heat Sink, and System Board Assembly

The CPU, heatsink, and system board are replaced as a single assembly.

Tip – To perform the steps in this section, you need a 5 mm wrench to remove and install the SCSI pillars and the DB-9 jackposts.

1.12.1 Removing the System Board

1. **Power off the server.**

   See Section 1.2, “Controlling Server Power” on page 1-2.

2. **Ensure that the server is properly grounded.**

   See Section 1.3, “Avoiding Electrostatic Discharge” on page 1-3.

3. **Open the back section of the cover.**

   See Section 1.4, “Opening the Server” on page 1-5.

4. **Disconnect the power supply wiring harness from the system board.**

5. **Disconnect the interface board SCSI and IDE cables from the system board.**

6. **If any PCI cards are fitted, remove them.**

   See Section 1.14.1, “Adding a PCI Card” on page 1-25.

7. **Remove the PCI slider assembly.**

8. **Remove the server fan assembly.**

9. **Unscrew and remove the DB-9 and SCSI jackposts on the server’s back panel.**

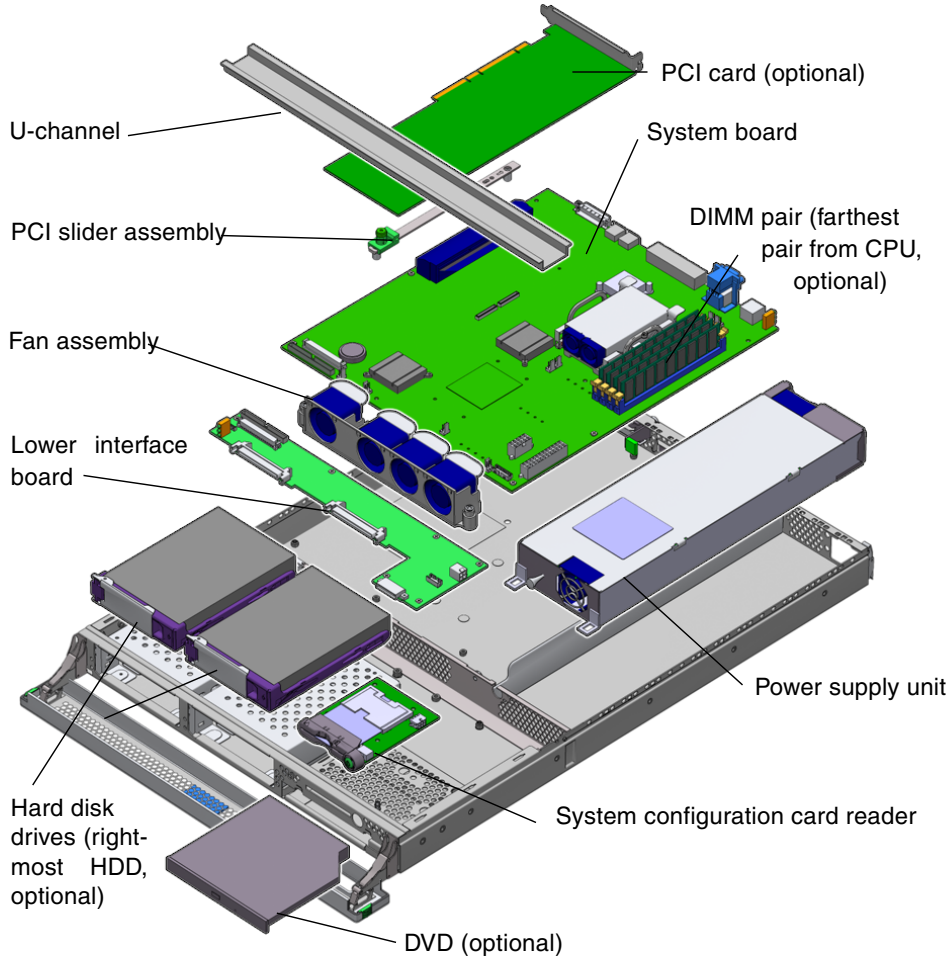

FIGURE 1-13 Accessing the System Board for Removal

10. **Unscrew the system board.**

    The system board is secured to the chassis by ten screws.

11. **Slide the system board toward the front of the chassis so that the SCSI, Ethernet, and serial connectors come free from the chassis.**

12. **Lift the system board out of the chassis.**

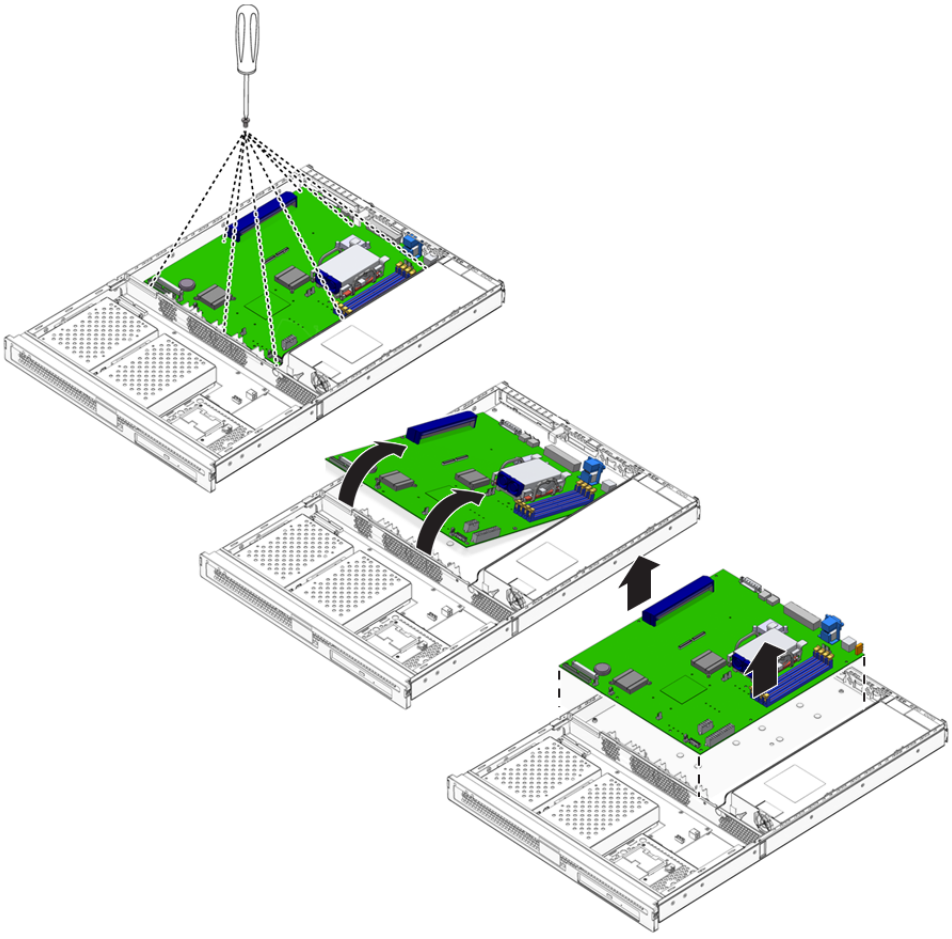

FIGURE 1-14 Removing the System Board From the Chassis

1.12.2 Installing a System Board

1. **Insert the new system board and locate it so that the SCSI, Ethernet, and serial connectors are firmly positioned in their slots at the back of the chassis.**

2. **Insert all system board screws loosely.**

   Do not put any screws in the holes for the PCI card slide retainer. These holes are identified by a circle printed around their circumference.

3. **Install the PCI slider assembly.**

   The arrow embossed on the slider should point to the rear of the server.

4. **Install any PCI cards you removed.**
5. **Reconnect all system board cables and wiring harnesses.**
6. **Install the server's cover and tighten the screws.**

1.13 Lower Interface Board Assembly

The interface board assemblies handle the connections between the system board and the components in the front section of the server. The assemblies are positioned in the front section of the server, behind the hard drives and system configuration card reader assembly.

1.13.1 Removing a Lower Interface Board Assembly

1. **Power off the server.**

   See Section 1.2, "Controlling Server Power" on page 1-2.

2. **Ensure that the server is properly grounded.**

   See Section 1.3, "Avoiding Electrostatic Discharge" on page 1-3.

3. **Remove all hard drives.**
4. **Remove DVD drive, if one is fitted in the system.**
5. **Remove the cover assembly.**

   See Section 1.4, "Opening the Server" on page 1-5.

6. **Disconnect the system board cable.**
7. **Disconnect the PSU cable.**
8. **Disconnect the system configuration card reader cable.**
9. **Unscrew the eight screws that secure the LIB to the server's chassis as shown in the following figure.**

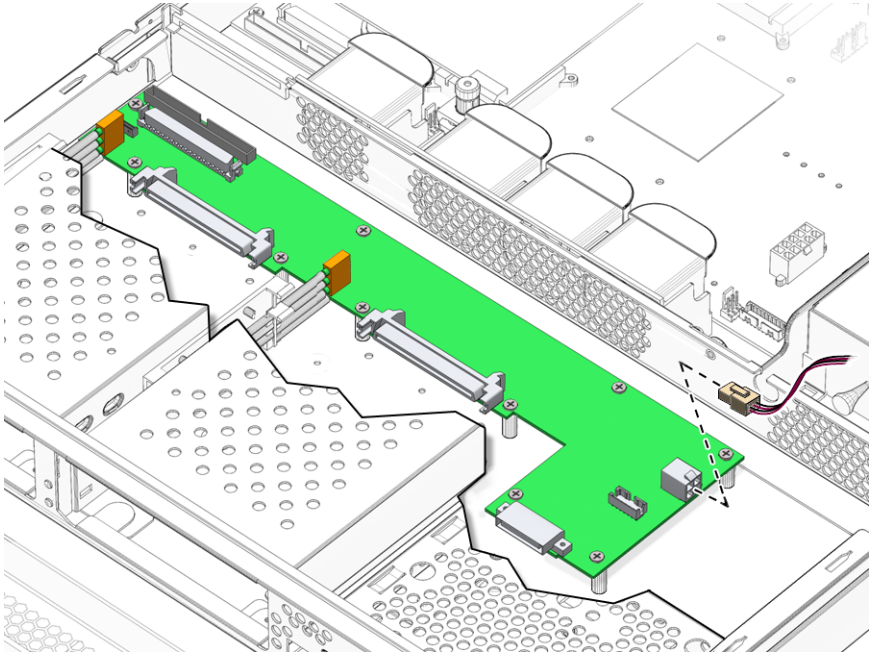

FIGURE 1-15 Lower Interface Board Standoff and Screw Locations

10. **Lift the LIB assembly part of the way out of the server chassis.**
11. **Disconnect the cable from the bezel assembly.**
12. **Remove the LIB from the server.**

1.13.2 Installing a Lower Interface Board Assembly

1. **Locate the new LIB assembly using the screw holes at each corner as guides.**
   The LIB printed circuit board (PCB) pushes onto (blind-mates) its connectors.
2. **Screw the LIB into place.**
3. **Attach the bezel PCB, PSU, and system board cables.**
4. **Install the cover assembly.**

1.14 PCI Cards

The PCI slot on the Sun Fire V125 server operates at 3.3 Vdc and supports one 64-bit PCI card running at 33 MHz or 66 MHz.

1.14.1 Adding a PCI Card

1. **Power off the server.**

   See Section 1.2, “Controlling Server Power” on page 1-2.

2. **Ensure that the server is properly grounded.**

   See Section 1.3, “Avoiding Electrostatic Discharge” on page 1-3.

3. **Open the back section of the server.**

   See Section 1.4, “Opening the Server” on page 1-5.

4. **Unscrew the PCI lockdown screw on the back of the server.**

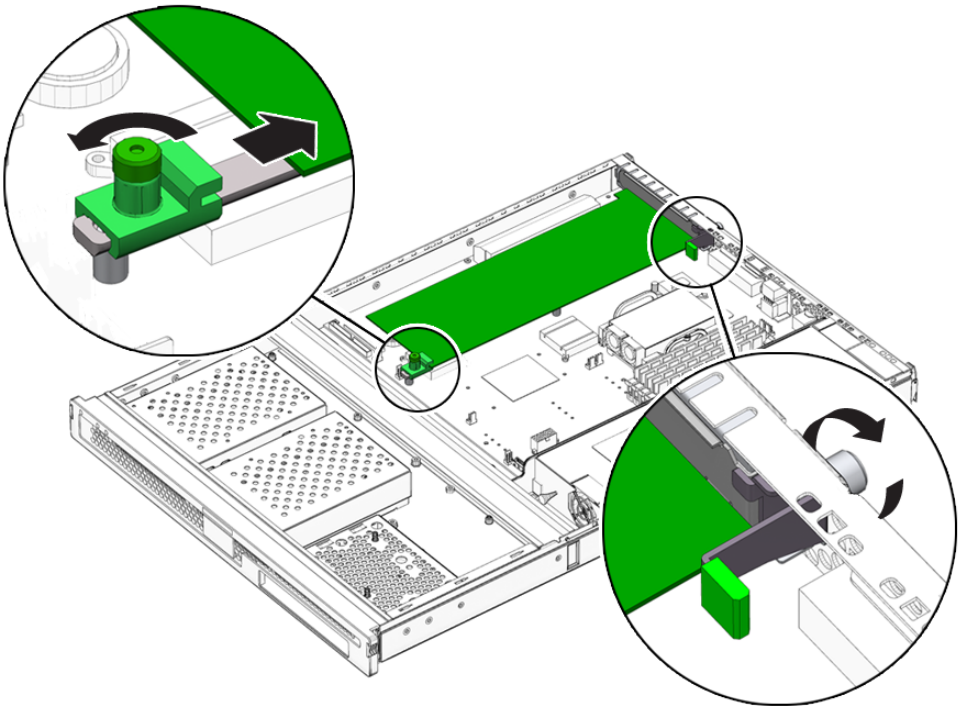

FIGURE 1-16 Location of PCI Lockdown Screw

5. **Remove the PCI lockdown bracket on the inside of the server.**
6. **Slide the PCI card support clear of the PCI card.**
7. **Disconnect and remove the PCI card.**

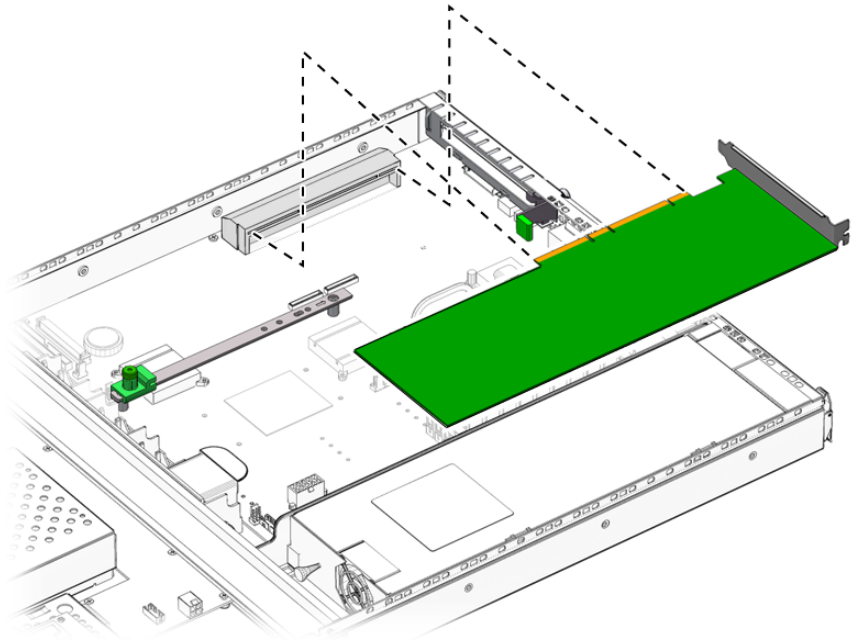

FIGURE 1-17 Removing a PCI Card

1.14.1.1 Replacing a PCI card

1. **Locate the PCI card in the appropriate slot and press it firmly into the connector.**
2. **Locate the PCI card support so that it supports the back of the card.**
3. **Attach the PCI lockdown bracket and tighten the PCI lockdown screw.**

1.15 Sun Cryptographic Accelerator

The hardware cryptographic accelerator clips onto the server's system board. For more information, see the *Sun Crypto Accelerator 1000 Installation and User's Guide*.

1.15.1 Removing the Sun Cryptographic Accelerator

1. Locate the clip that secures the cryptographic accelerator onto the system board.
2. Squeeze the clip to compress it.
3. Lift the cryptographic accelerator away from the chassis (FIGURE 1-18).

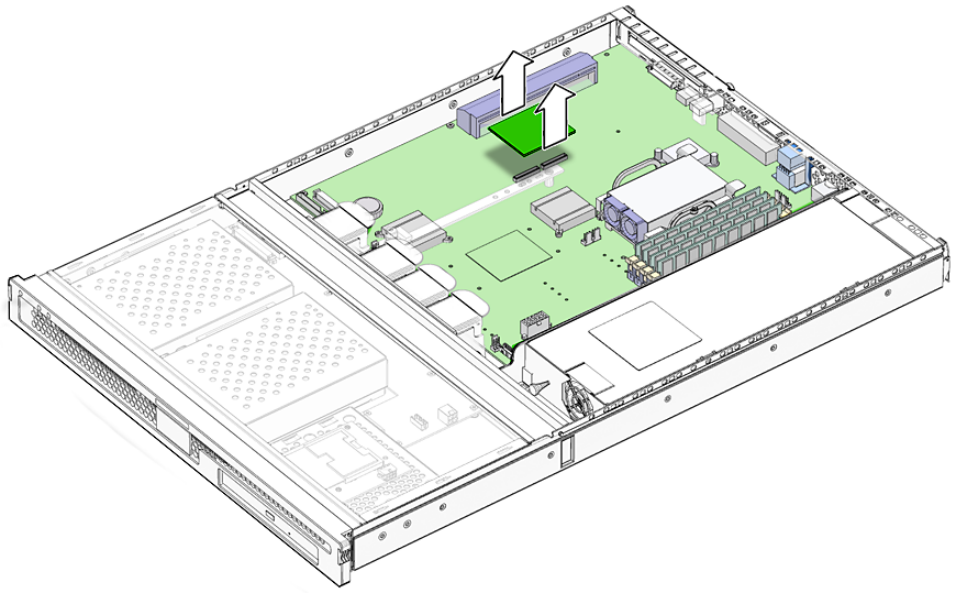

FIGURE 1-18 Removing the Cryptographic Accelerator

1.15.2 Installing the Sun Cryptographic Accelerator

1. Press the standoff into the motherboard.
2. Place the cryptographic accelerator onto the standoff and connector on the motherboard.
3. Press the accelerator into place.

1.16 Battery

The battery powers the server's internal real time clock (RTC).

Tip – When replacing the battery, only use an identical replacement part.

1.16.1 Replacing the RTC Battery

1. **Power off the server.**
   See Section 1.2, "Controlling Server Power" on page 1-2.
2. **Ensure that the server is properly grounded.**
   See Section 1.3, "Avoiding Electrostatic Discharge" on page 1-3.
3. **Open the back section of the cover.**
   See Section 1.4, "Opening the Server" on page 1-5.
4. **Unclip the battery from its housing on the system board.**
   Push the retaining clip to one side to release the battery.
5. **Locate the new battery in the housing and press down to secure it in place.**

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