

# Sun™ Ultra™ 80 Upgrade Guide

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THE NETWORK IS THE COMPUTER™

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# Preface

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The *Sun™ Ultra™ 80 Upgrade Guide* provides detailed procedures that describe the removal of reusable components from Ultra™ 2, Ultra 30 and Sun Ultra 60 workstations. This book is written for technicians, system administrators, authorized service providers (ASPs), and advanced computer system end users who have experience troubleshooting and replacing hardware.

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## How This Book Is Organized

This document is organized into chapters and appendices as listed in TABLE P-1.

**TABLE P-1** Document Organization

Chapter Number/Title	Content Description
Chapter 1 “Safety and Tool Requirements”	Explains how to work safely when servicing the system unit.
Chapter 2 “Upgrading from an Ultra 2 System”	Provides step-by-step procedures to power off, open and remove DIMM memory for transfer to an Ultra 80 upgrade system.
Chapter 3 “Upgrading from an Ultra 30 or an Ultra 60 System”	Provides step-by-step procedures to power off, open and remove DIMM memory and an Elite3D graphics card for transfer to an Ultra 80 upgrade system.

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# Using UNIX Commands

This document does not contain information on basic UNIX® commands and procedures.

See one or more of the following for this information:

- *Solaris 2.x Handbook for SMCC Peripherals.*
- AnswerBook2™ online documentation for the Solaris™ 2.x software environment.
- Other software documentation that you received with your system.

---

## Typographic Conventions

TABLE P-2 Typographic Conventions

Typeface or Symbol	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. Command-line variable; replace with a real name or value.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be root to do this. To delete a file, type <code>rm filename</code> .



---

# Shell Prompts

**TABLE P-3** 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	#

---

# Related Documentation

**TABLE P-4** Related Documentation

Application	Title	Part#
Installation	<i>Sun Ultra 80 Getting Started Guide</i>	805-6615

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# Safety and Tool Requirements

---

This chapter describes the safety requirements, symbols, safety precautions, and tools required to remove reusable components from Ultra™ 2, Ultra 30 and Sun Ultra 60 workstations.

This chapter contains the following topics:

- Section 1.1 “Safety Requirements” on page 1-1
- Section 1.2 “Symbols” on page 1-2
- Section 1.3 “Safety Precautions” on page 1-2
- Section 1.4 “Tools Required” on page 1-4

---

## 1.1 Safety Requirements

For protection, observe the following safety precautions when setting up the equipment:

- Follow all cautions, warnings, and instructions marked on the equipment.
- Ensure that the voltages and frequency rating of the power receptacle match the electrical rating label on the equipment.
- Never push objects of any kind through openings in the equipment. They may touch dangerous voltage points or short components resulting in fire or electric shock.
- Refer servicing of equipment to qualified personnel.

---

## 1.2 Symbols

The following symbols mean:



---

**Caution** – Risk of personal injury and equipment damage. Follow the instructions.

---



---

**Caution** – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

---



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**Caution** – Hot surfaces. Avoid contact. Surfaces are hot and may cause personal injury if touched.

---

---

## 1.3 Safety Precautions

Follow all safety precautions.

### 1.3.1 Modification to Equipment



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**Caution** – Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

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### 1.3.2 Placement of a Sun Product



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**Caution** – To ensure reliable operation of the Sun product and to protect it from overheating, openings in the equipment must not be blocked or covered. A Sun product should never be placed near a radiator or hot air register.

---

### 1.3.3 Power Cord Connection



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**Caution** – Not all power cords have the same current ratings. Household extension cords do not have overload protection. Do not use household extension cords with the Sun product.

---



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**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 connect the power cord into a grounded electrical receptacle 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.

---

### 1.3.4 Electrostatic Discharge



---

**Caution** – DIMMs, circuit boards, and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothes or work environment can destroy components. Do not touch the components themselves or any metal parts. Wear the wrist strap when the system unit access panel is open.

---

### 1.3.5 Lithium Battery



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**Caution** – On Sun system boards, a lithium battery is molded into the real-time clock, SDS No. M48T59Y, MK48TXXB-XX, M48T18-XXXPCZ or M48T59W-XXXPCZ. Batteries are not customer replaceable parts. They may explode if mistreated. Do not dispose of the battery in fire. Do not disassemble it or attempt to recharge the lithium battery.

---

---

## 1.4 Tools Required

The following tools are required.

- No. 2 Phillips screwdriver (magnetized tip suggested)
- Antistatic wrist strap
- Antistatic mat

Place ESD-sensitive components such as circuit cards and DIMMs on an antistatic mat. The following items can be used as an antistatic mat:

- Bag used to wrap a Sun replacement part
- Shipping container used to package a Sun replacement part
- Inner side (metal part) of the system cover
- Sun ESD mat, part number 250-1088 (can be purchased through your Sun sales representative)
- Disposable ESD mat; shipped with replacement parts or optional system features

## Upgrading from an Ultra 2 System

---

This chapter contains procedures to power off and open the Ultra 2 system, remove DIMMs for transfer to an Ultra 80 system, and closing the system.

This chapter contains the following topics:

- Section 2.1 “Powering Off the Ultra 2 System” on page 2-1
- Section 2.2 “Removing the Ultra 2 System Cover” on page 2-3
- Section 2.3 “Attaching the Wrist Strap” on page 2-5
- Section 2.4 “Removing Ultra 2 DIMMs” on page 2-6
- Section 2.5 “Replacing the Ultra 2 System Cover” on page 2-7

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### 2.1 Powering Off the Ultra 2 System



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**Caution** – Prior to turning off the system power, exit from the operating system. Failure to do so may result in loss of data.

---



---

**Caution** – Wear an antistatic wrist strap and use an ESD-protected mat when handling components. When servicing or removing system components, attach an ESD strap to your wrist, then attach the ESD strap to a metal area on the chassis, and then disconnect the power cord from the system and the wall receptacle. Following this caution equalizes all electrical potentials with the system.

---

To power off the system:

1. **Notify users that the system is going down.**
2. **Back up system files and data.**

See the *Solaris Handbook for SMCC Peripherals*, part number 802-7675.

### 3. Halt the system.



---

**Caution** – Pressing the front panel power switch does not remove all power from the system; a trickle voltage remains in the power supply. To remove all power from the system, disconnect the AC power cord from the system.

---

### 4. Set the power on/standby switch to the stand-by (O) position (FIGURE 2-1).

### 5. Verify the following:

- a. Front panel LED is extinguished.
- b. System fans are disabled.



---

**Caution** – When the power on/standby switch is in stand-by (O) and the AC power cord remains connected to a power receptacle, AC voltage is present in the power supply primary.

---



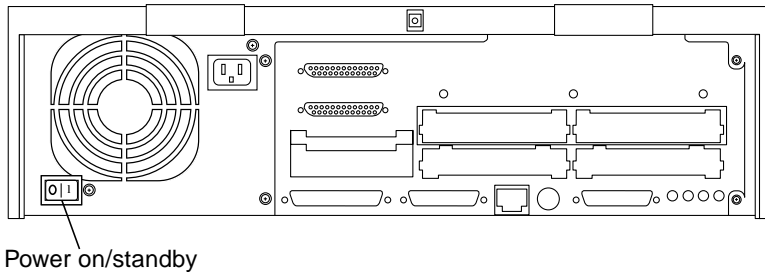
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**Caution** – Disconnect the AC power cord from the AC receptacle prior to handling the power supply. When servicing system components other than the power supply, the AC power cord should remain connected to the AC receptacle.

---

### 6. Turn off the power to the monitor and any peripheral equipment.

### 7. Disconnect cables to any peripheral equipment.



**FIGURE 2-1** Rear View of the Ultra 2 System



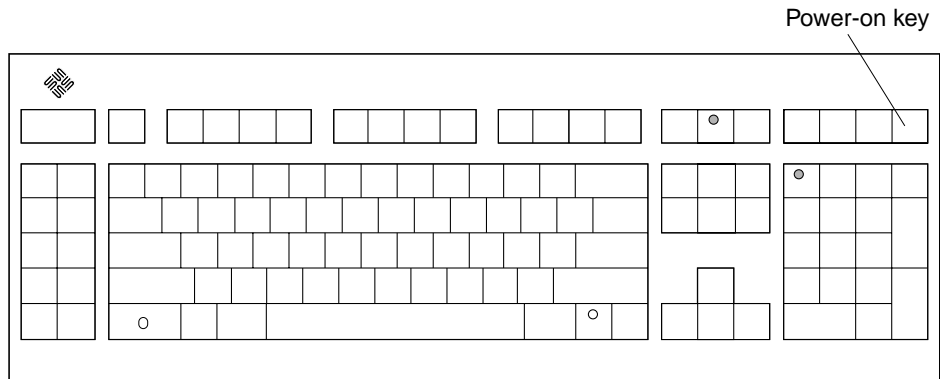
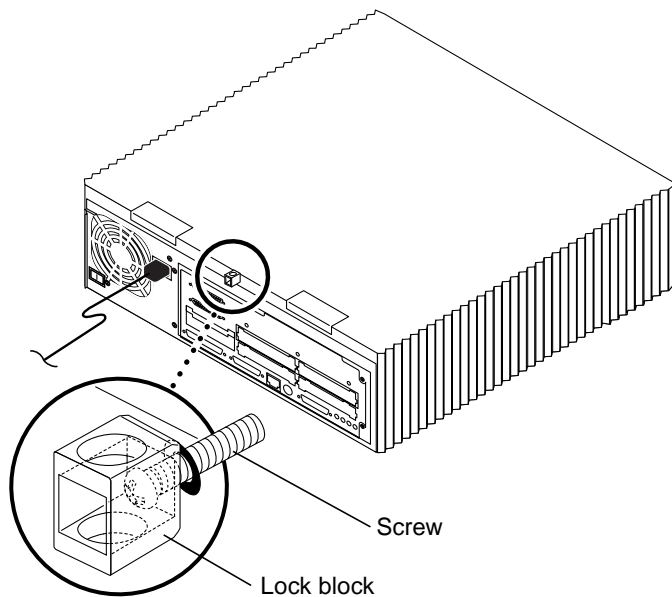


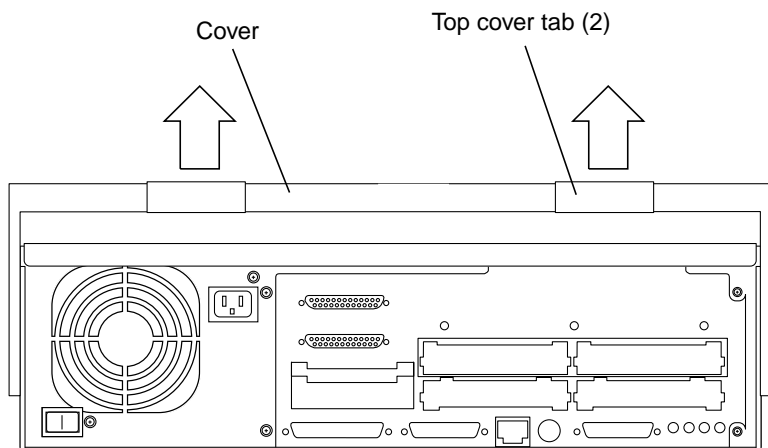
FIGURE 2-2 Sun Type-5 Keyboard

## 2.2 Removing the Ultra 2 System Cover

1. Using a number 2 Phillips screwdriver, loosen the screw securing the lock block (if installed) to the cover and back panel. Remove the lock block (FIGURE 2-3).
2. Pull the two top cover tabs to free the cover from the back panel (FIGURE 2-4).
3. Grasp the sides of the cover and proceed as follows:
  - a. Lift the cover from the back panel.
  - b. When the cover clears the back panel, move the cover away from the front panel to free it from the chassis and set aside.



**FIGURE 2-3** Location of Ultra 2 Lock Block



**FIGURE 2-4** Removing the Ultra 2 System Cover

## 2.3

# Attaching the Wrist Strap



**Caution** – Wear an antistatic wrist strap and use an ESD-protected mat when handling components. When servicing or removing system components, attach an ESD strap to your wrist, then attach the ESD strap to a metal area on the chassis, and then disconnect the power cord from the system and the wall receptacle. Following this caution equalizes all electrical potentials with the system.

1. Unwrap the first two folds of the wrist strap and wrap the adhesive side firmly against the wrist (FIGURE 2-5).
2. Peel the liner from the copper foil at the opposite end of the wrist strap. Attach the copper end of the wrist strap to the chassis.

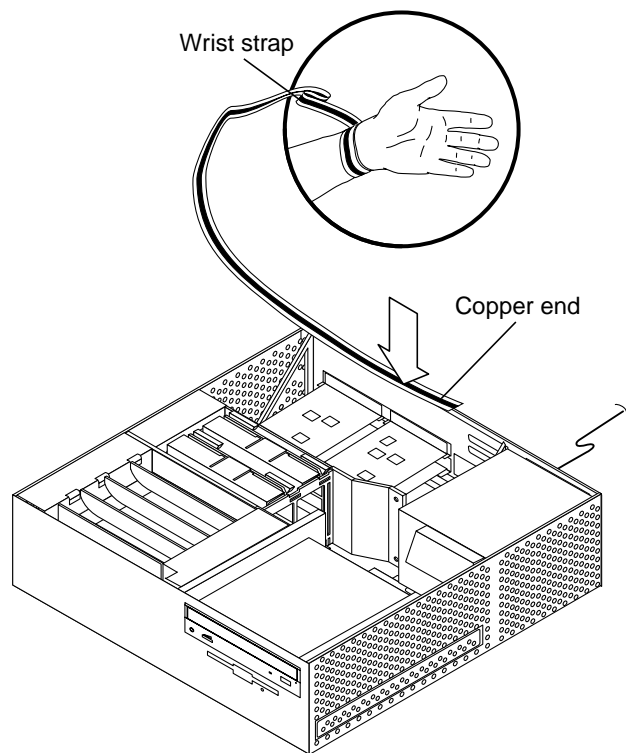


FIGURE 2-5 Attaching the Wrist Strap to the Ultra 2 Chassis

## 2.4 Removing Ultra 2 DIMMs

To remove and replace a DIMM, proceed as follows.



---

**Caution** – DIMMs consist of electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or work environment can destroy the DIMM.

---



---

**Caution** – Handle DIMMs only by the edges. Do not touch the DIMM components or metal parts. Always wear a grounding strap when handling a DIMM.

---



---

**Caution** – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing it on any surface.

---

1. Attach the wrist strap.
2. Locate the DIMM to be removed.
3. Push the ejection lever away from the DIMM (FIGURE 2-6).
4. Remove the DIMM from the socket.

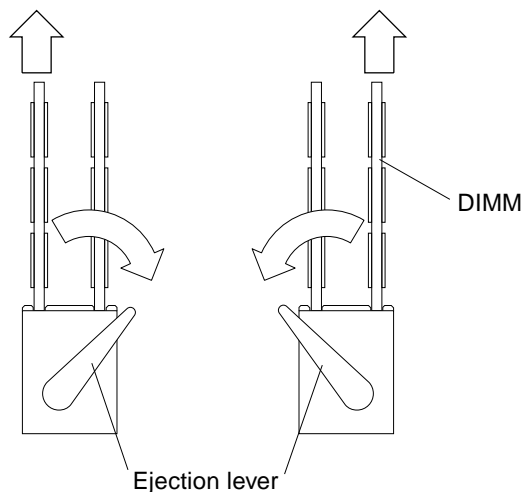


FIGURE 2-6 Ultra 2 DIMM Ejection Lever

---

## 2.5 Replacing the Ultra 2 System Cover

1. Hold the cover at a 30-degree angle to the system.
2. Position the cover lip to the chassis lip.
3. Lower the cover onto the system so that the rear of the cover is supported by the chassis back panel (FIGURE 2-7).
4. Press down on both sides of the cover near the front edges until it firmly seats with the chassis back panel.
5. Press the tabs near the back panel.
6. Position the lock block. Tighten the screw securing the lock block to the cover and back panel.

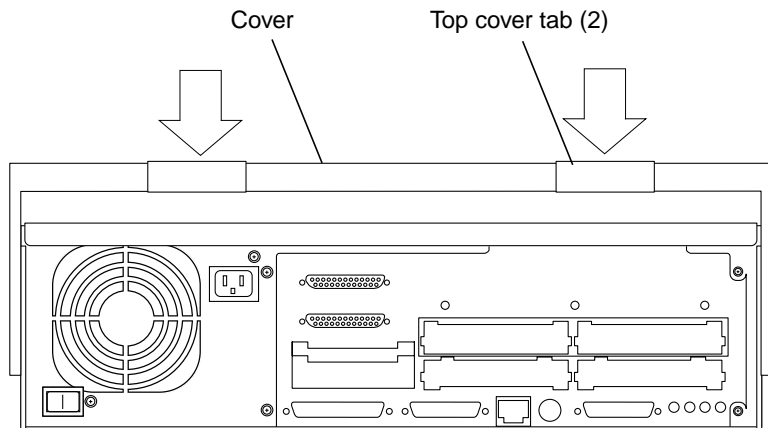


FIGURE 2-7 Replacing the Ultra 2 System Cover



# Upgrading from an Ultra 30 or an Ultra 60 System

---

This chapter contains procedures to power off the Ultra 30 or Ultra 60 system, open the system, and to remove memory and graphics cards for transfer to a Sun Ultra 80 system. Illustrations in this chapter show an Ultra 60, but the Ultra 30 uses the same procedural steps.

This chapter contains the following topics:

- Section 3.1 “Powering Off the Ultra 60 System” on page 3-1
- Section 3.2 “Removing the Ultra 60 Side Access Cover” on page 3-3
- Section 3.3 “Attaching the Wrist Strap” on page 3-4
- Section 3.4 “Removing an Elite3D Graphics Card” on page 3-6
- Section 3.5 “Removing Ultra 60 DIMMs” on page 3-8
- Section 3.6 “Replacing the Ultra 60 Side Access Cover” on page 3-12

---

## 3.1 Powering Off the Ultra 60 System



---

**Caution** – Before turning off the system power, exit from the operating system. Failure to do so may result in data loss.

---



---

**Caution** – Wear an antistatic wrist strap and use an ESD-protected mat when handling components. When servicing or removing system components, attach an ESD strap to your wrist, then to a metal area on the chassis, and then disconnect the power cord from the system and the wall receptacle. Following this caution equalizes all electrical potentials with the system.

---

To power off the system:

1. **Back up system files and data.**
2. **Halt the system.**



---

**Caution** – Pressing the front panel power switch does not remove all power from the system; a trickle voltage remains in the power supply. To remove all power from the system, disconnect the AC power cord.

---

3. **Set the front panel power switch to the Off position (FIGURE 3-1).**
4. **Verify the following:**
  - a. **The front panel LED is off.**
  - b. **The system fans are not spinning.**

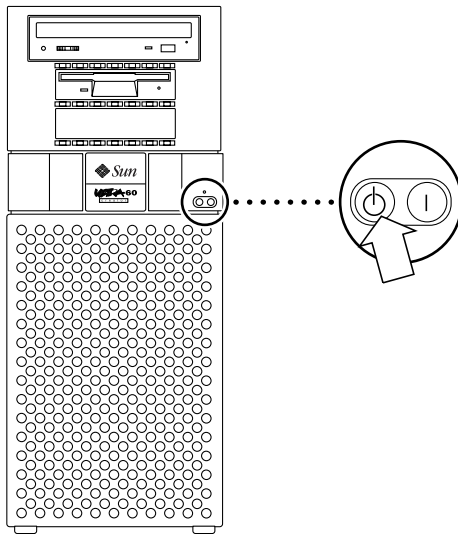


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**Caution** – Disconnect the AC power cord prior to servicing system components.

---

5. **Turn off the power to the monitor.**
6. **Disconnect cables to any peripheral equipment.**



**FIGURE 3-1** Ultra 60 System Power-Off (Front Panel)



---

## 3.2 Removing the Ultra 60 Side Access Cover

1. Use a No. 2 Phillips screwdriver to disconnect the lock block (FIGURE 3-2).

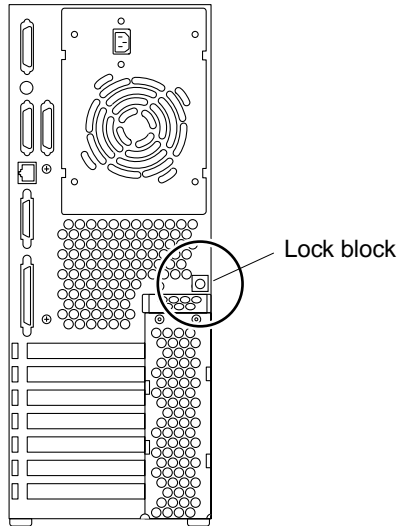


FIGURE 3-2 Ultra 60 Lock Block Location

2. Remove the side access cover as follows (FIGURE 3-3):
  - a. Lay the system on its side in the service position.
  - b. Grasp the side panel and pull it toward the back of the system.
  - c. Disengage the side access cover from the chassis hooks.
  - d. Grasping the access cover sides, lift the side access cover upward and remove.

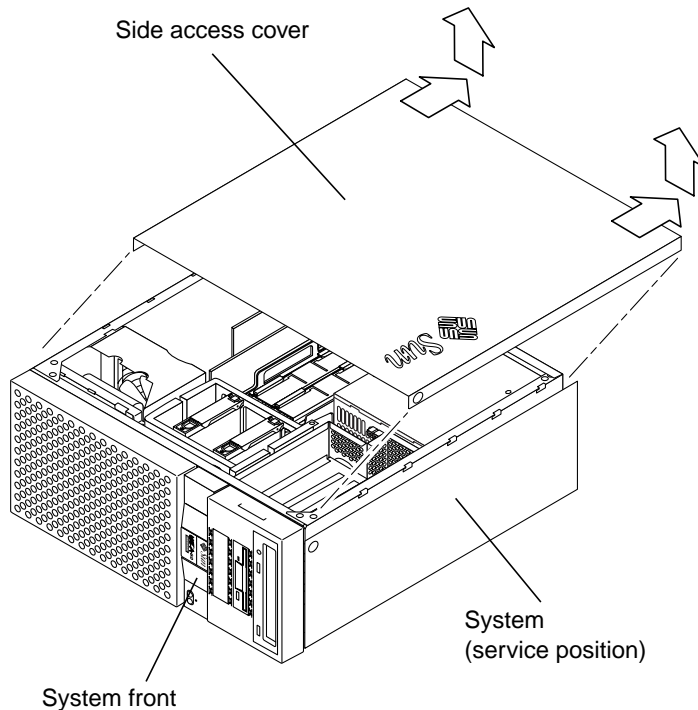


FIGURE 3-3 Removing the Ultra 60 Side Access Cover

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## 3.3 Attaching the Wrist Strap

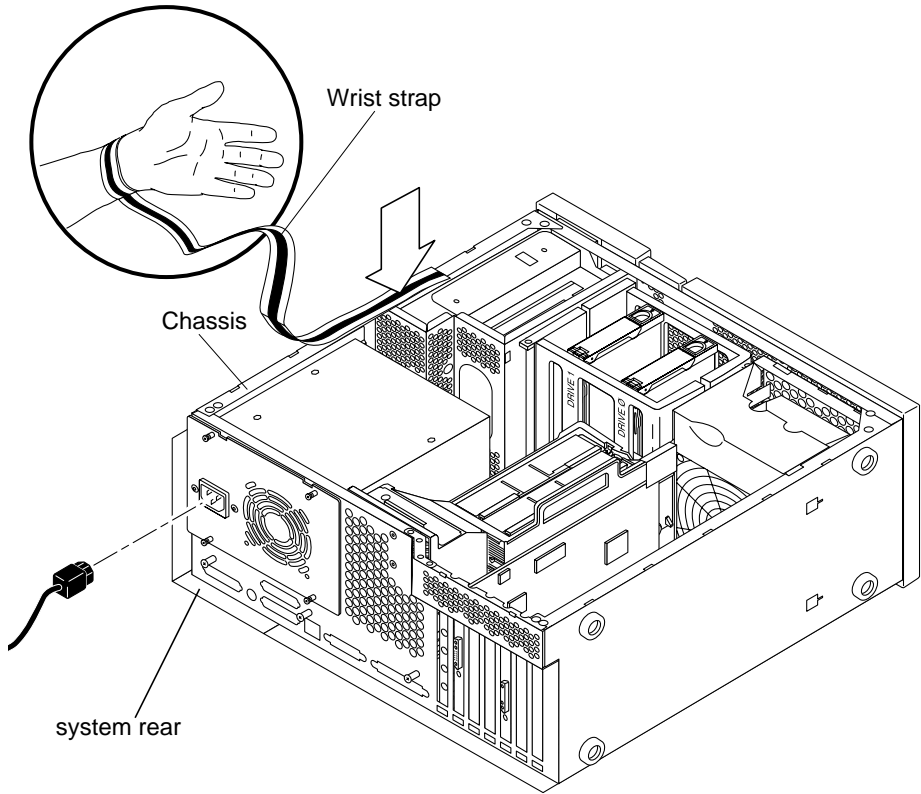


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**Caution** – Wear an antistatic wrist strap and use an ESD-protected mat when handling components. When servicing or removing system components, attach an ESD strap to your wrist, then to a metal area on the chassis, and then disconnect the power cord from the system and the wall receptacle. Following this caution equalizes all electrical potentials with the system.

---

1. Unwrap the first two folds of the wrist strap; wrap the adhesive side firmly against the wrist.
2. Peel the liner from the copper foil at the opposite end of the wrist strap.
3. Attach the copper end of the wrist strap to the chassis (FIGURE 3-4).
4. Disconnect the AC power cord.



**FIGURE 3-4** Attaching the Wrist Strap to the Ultra 60 Chassis

---

## 3.4 Removing an Elite3D Graphics Card

To remove and replace a Elite3D graphics card, proceed as follows.

1. **Disconnect the video cable from the graphics card video connector.**



---

**Caution** – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

---

2. **Attach the wrist strap.**

See Section 3.3 “Attaching the Wrist Strap” on page 3-4.

3. **Remove the Elite3D graphics card as follows (FIGURE 3-5):**

- a. **Using a No. 2 Phillips screwdriver, remove the screw securing the graphics card bracket tab to the system chassis. Some Elite3D cards will have two filler brackets, remove both of them.**



---

**Caution** – Avoid applying force to one end or one side of the board, or connector damage may occur.

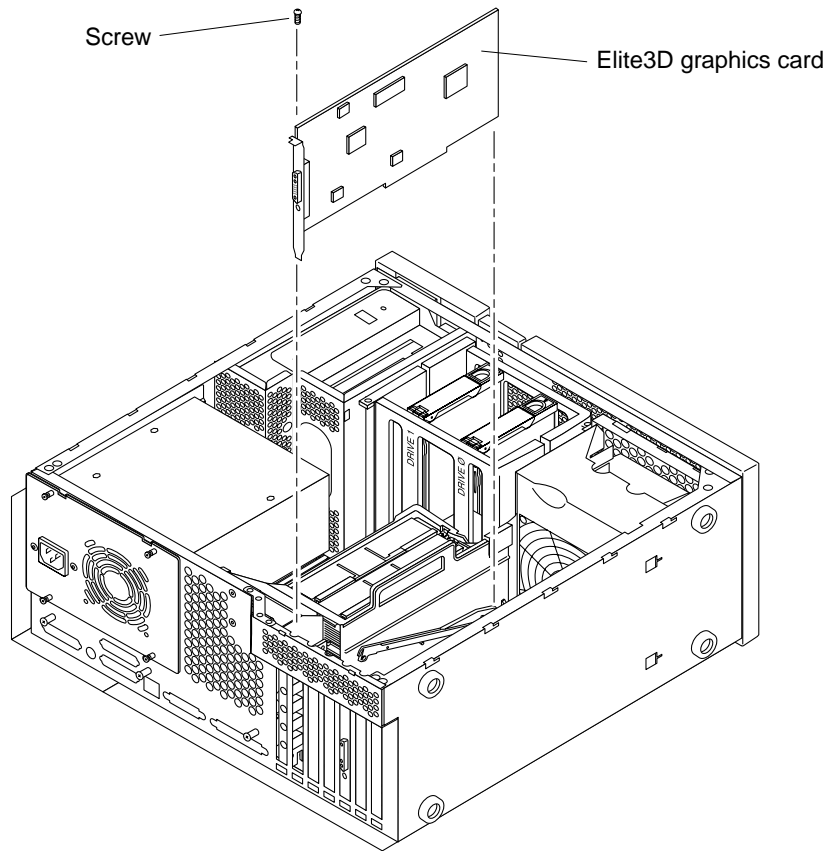
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- b. **At the two upper corners of the graphics card, pull the card straight up from the slot.**

- c. **Remove the Elite3D graphics card.**

4. **Place the Elite3D graphics card on an antistatic mat.**

Transfer the Elite3D graphics card(s) that you have removed from the system to the Ultra 80 upgrade system. Refer to the *Sun Ultra 80 Getting Started Guide* for instructions on properly installing the Elite3D graphics card in the Ultra 80.



**FIGURE 3-5** Removing and Replacing an Elite3D Graphics Card

---

## 3.5

# Removing Ultra 60 DIMMs

To remove and replace a DIMM, proceed as follows.



---

**Caution** – DIMMs consist of electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or work environment can destroy the DIMM.

---

---

**Caution** – Handle DIMMs only by the edges. Do not touch the DIMM components or metal parts. Always wear a grounding strap when handling a DIMM.

---



---

**Caution** – Use proper ESD grounding techniques when handling components. Wear an antistatic wrist strap and use an ESD-protected mat. Store ESD-sensitive components in antistatic bags before placing them on any surface.

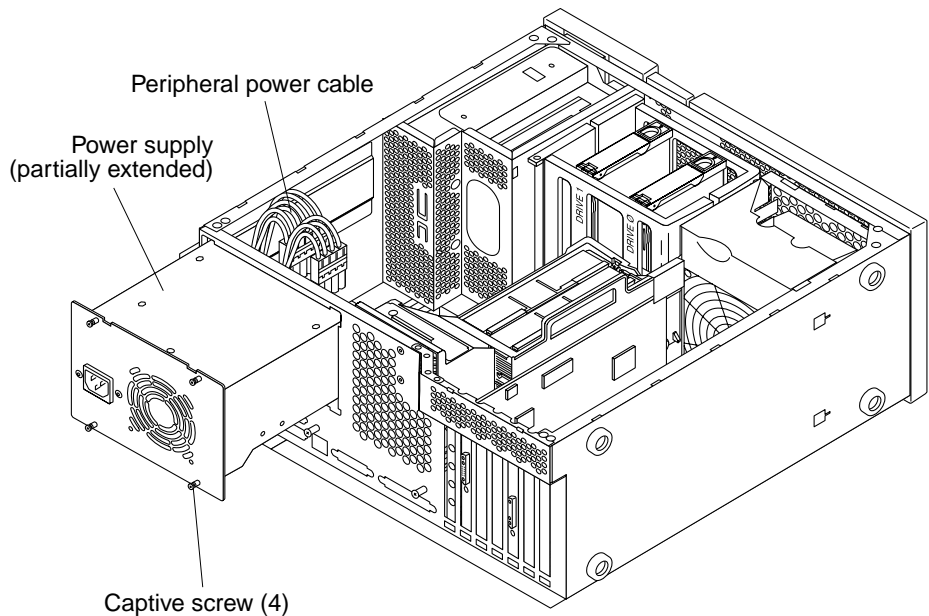
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### 1. Attach the wrist strap.

See Section 3.3 “Attaching the Wrist Strap” on page 3-4.

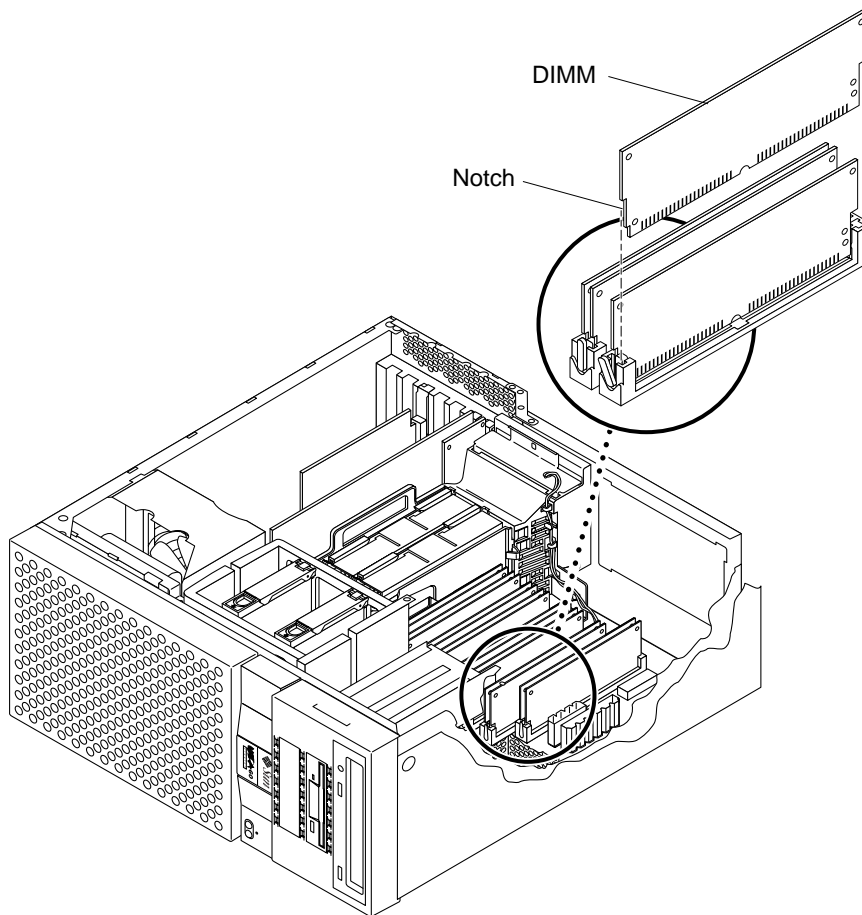
**2. Remove the power supply as follows (FIGURE 3-6):**

- a. Using a No. 2 Phillips screwdriver, loosen the four captive screws securing the power supply to the chassis.**
- b. Slide the power supply from the chassis rear until the power supply is stopped by the power supply cables.**
- c. Disconnect the peripheral cable connector from the power supply (not illustrated).**
- d. Disconnect the power supply cables from the motherboard (not illustrated).**
- e. Remove the power supply from the chassis.**



**FIGURE 3-6** Removing the Ultra 60 Power Supply

3. Locate the DIMM to be removed.
4. Push the lever away from the DIMM.
5. Remove the DIMM from the socket (FIGURE 3-7).
6. Place the DIMM on an antistatic mat.



**FIGURE 3-7** Removing a DIMM from an Ultra 60

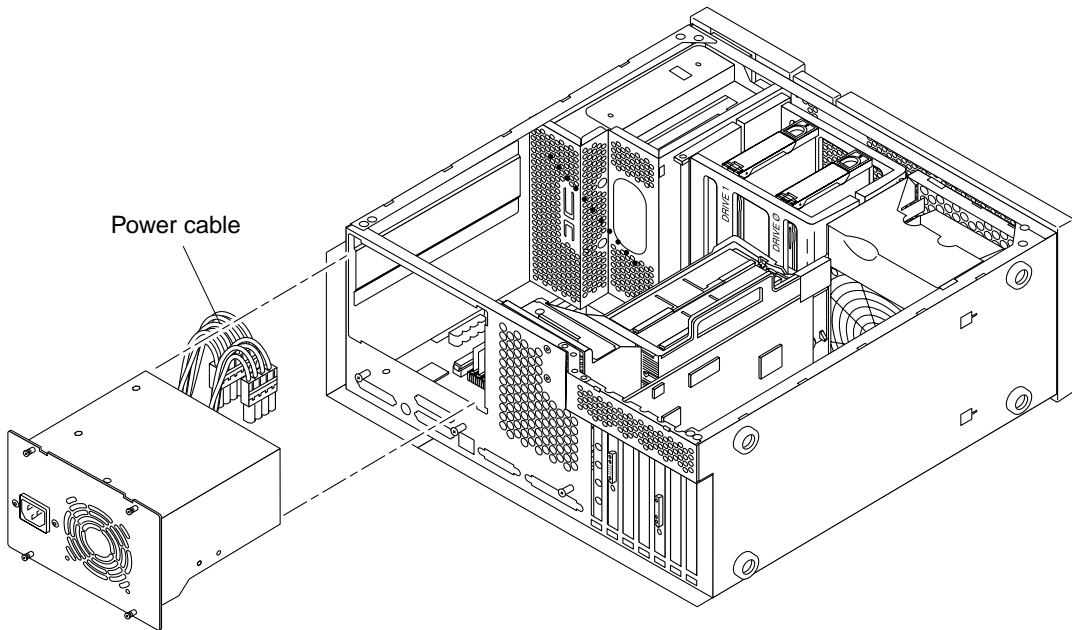
7. Repeat Steps 3 through 6 above until all DIMMs are removed from the system.

Transfer the DIMMs that you have removed from the system to the Ultra 80 upgrade system. Refer to the *Sun Ultra 80 Getting Started Guide* for instructions on properly installing DIMMs in the Ultra 80.



**8. Replace the power supply as follows (FIGURE 3-8):**

- a. Feed the power supply cables through the chassis opening; support the power supply cables while engaging the power supply into the chassis rails.**
- b. Position the power supply into the chassis.**
- c. Slide the power supply toward the chassis front.**
- d. Connect the power cables to the motherboard.**
- e. Connect the peripheral cable connector to the power supply.**
- f. Replace the peripheral power cable through the cable routing clips.**



**FIGURE 3-8** Replacing the Ultra 60 Power Supply

- g. Slide the power supply toward the chassis front until the power supply rear panel is flush with the chassis.**
- h. Using a No. 2 Phillips screwdriver, tighten the captive screws securing the power supply to the chassis.**

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**Note** – Tighten the captive screws in a clockwise order beginning with the upper right captive screw.

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## 3.6 Replacing the Ultra 60 Side Access Cover

1. Position the side access cover (FIGURE 3-9).
2. Engage the side access cover and the chassis hooks. Push the access cover towards the system front.
3. Connect the lock block (FIGURE 3-9).

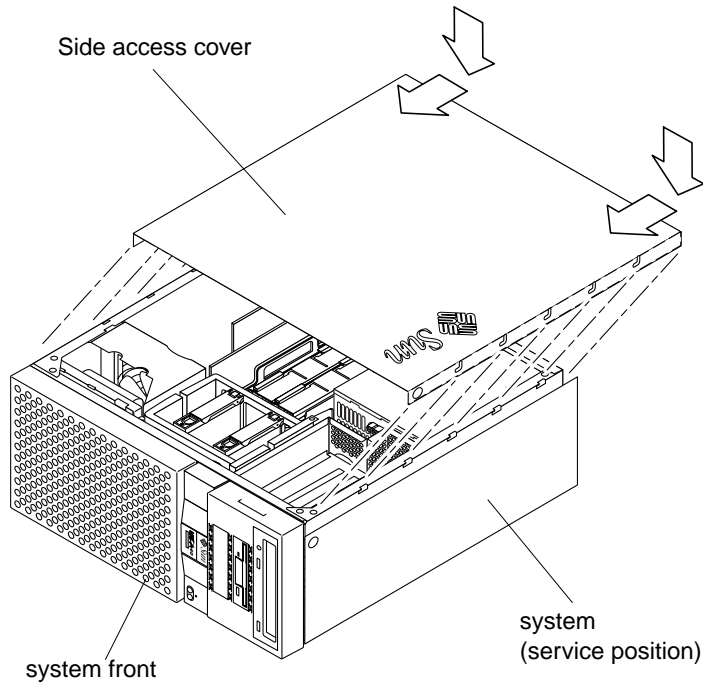


FIGURE 3-9 Replacing the Ultra 60 Side Access Cover